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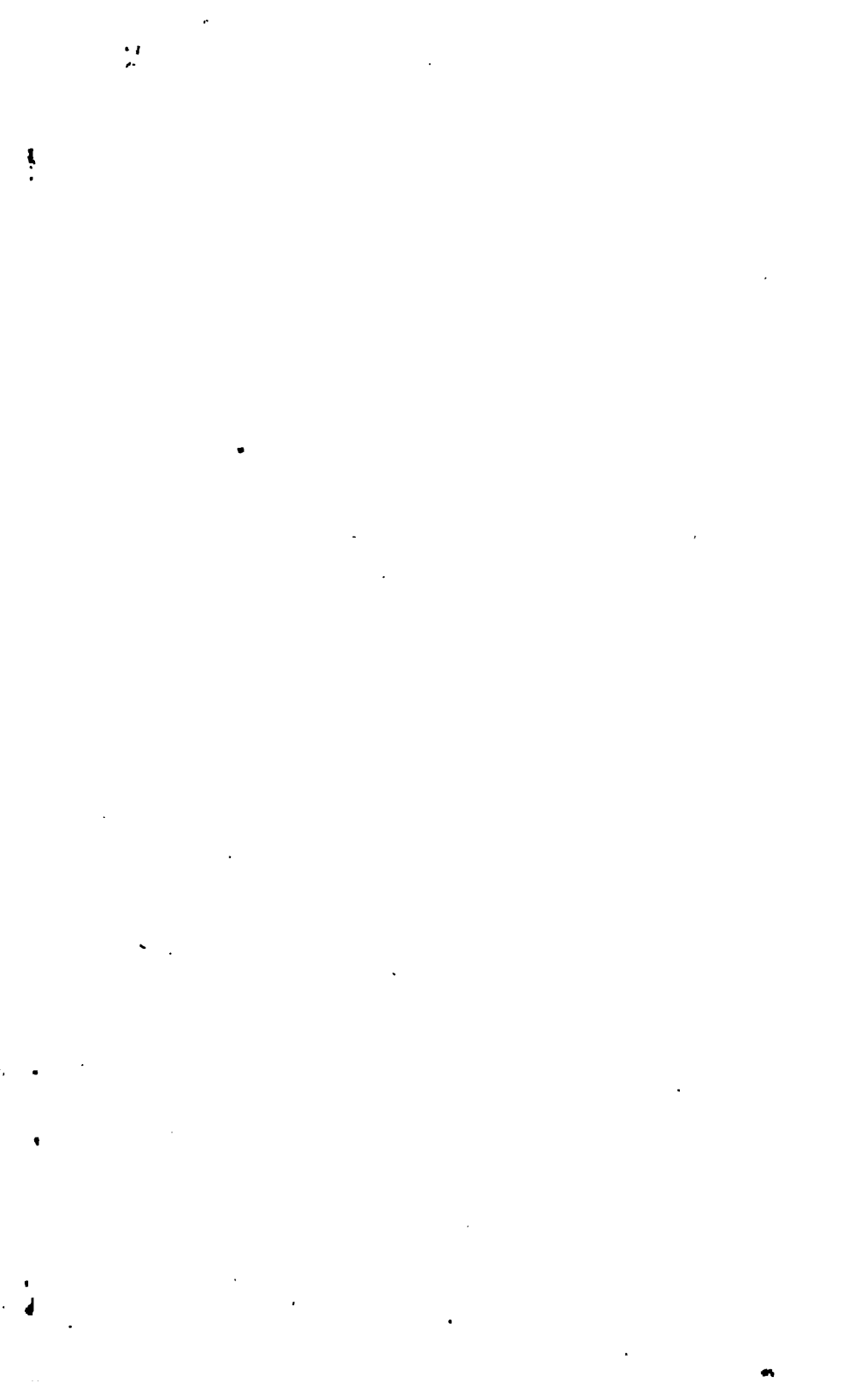
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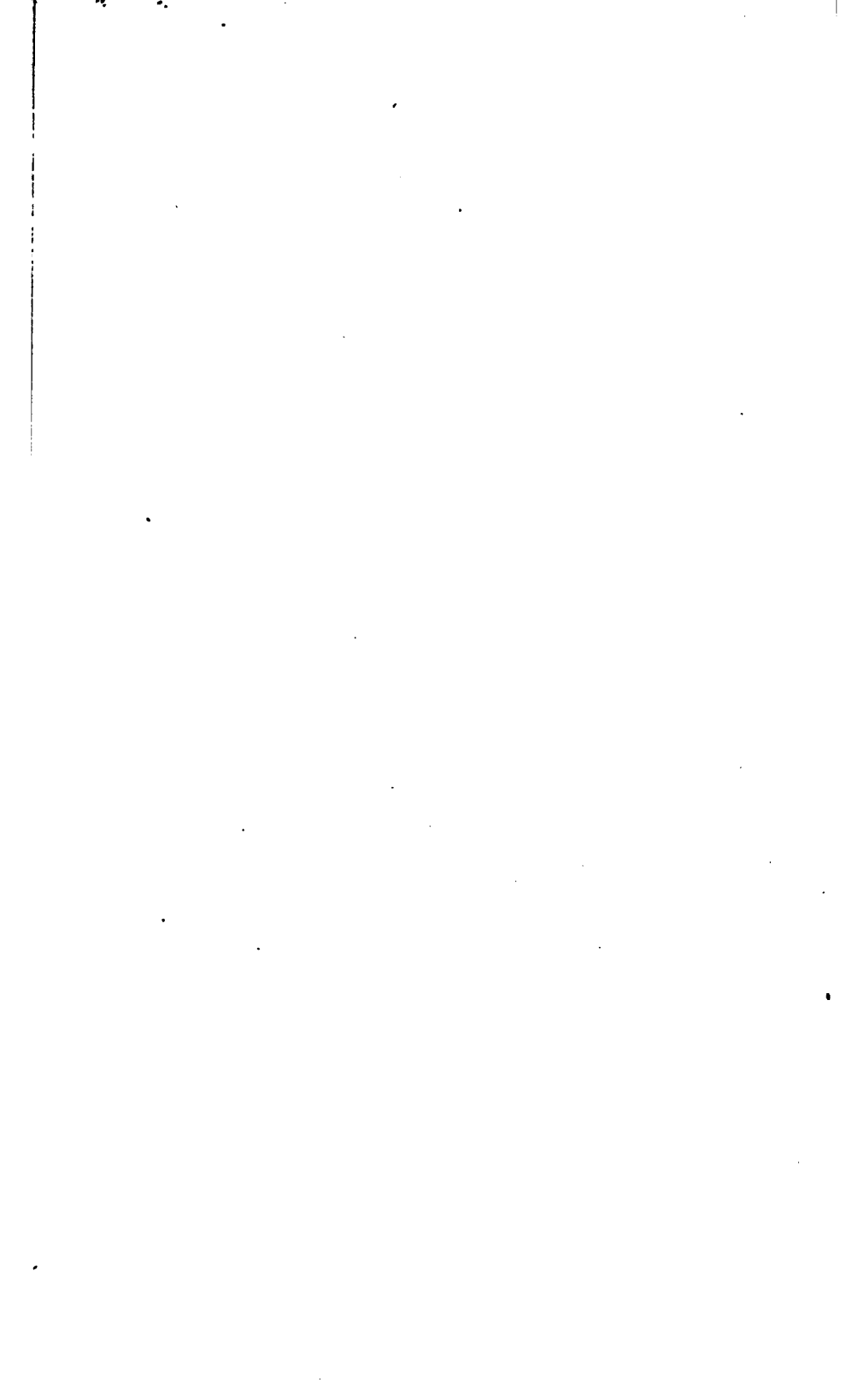






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THE
INDUSTRIAL RESOURCES
OF
NOVA SCOTIA.

COMPREHENDING

THE PHYSICAL GEOGRAPHY, TOPOGRAPHY,
GEOLOGY, AGRICULTURE, FISHERIES,
MINES, FORESTS, WILD LANDS, LUMBERING, MANUFACTORIES,
NAVIGATION, COMMERCE, EMIGRATION, IMPROVEMENTS,
INDUSTRY, CONTEMPLATED RAILWAYS,
NATURAL HISTORY AND RESOURCES,
OF THE PROVINCE.

By ABRAHAM GESNER, Esq.

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FELLOW OF THE GEOLOGICAL SOCIETY,

Corresponding Member of the Royal Geological Society of Cornwall,
Member of the Literary and Historical Society of Quebec,
Corresponding Member of the Academy of Natural Sciences
of Philadelphia, author of "Remarks on the Geology and
Mineralogy of Nova Scotia"—"New Brunswick,
with notes for Emigrants," &c.

HALIFAX, N. S.:

1849.

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PUBLISHED BY A. & W. MACKINLAY,
PRINTED BY ENGLISH & BLACKADAR.



TO HIS EXCELLENCY

LIEUTENANT-GENERAL

Sir John Harvey, K.C.B. and K.C.H.,

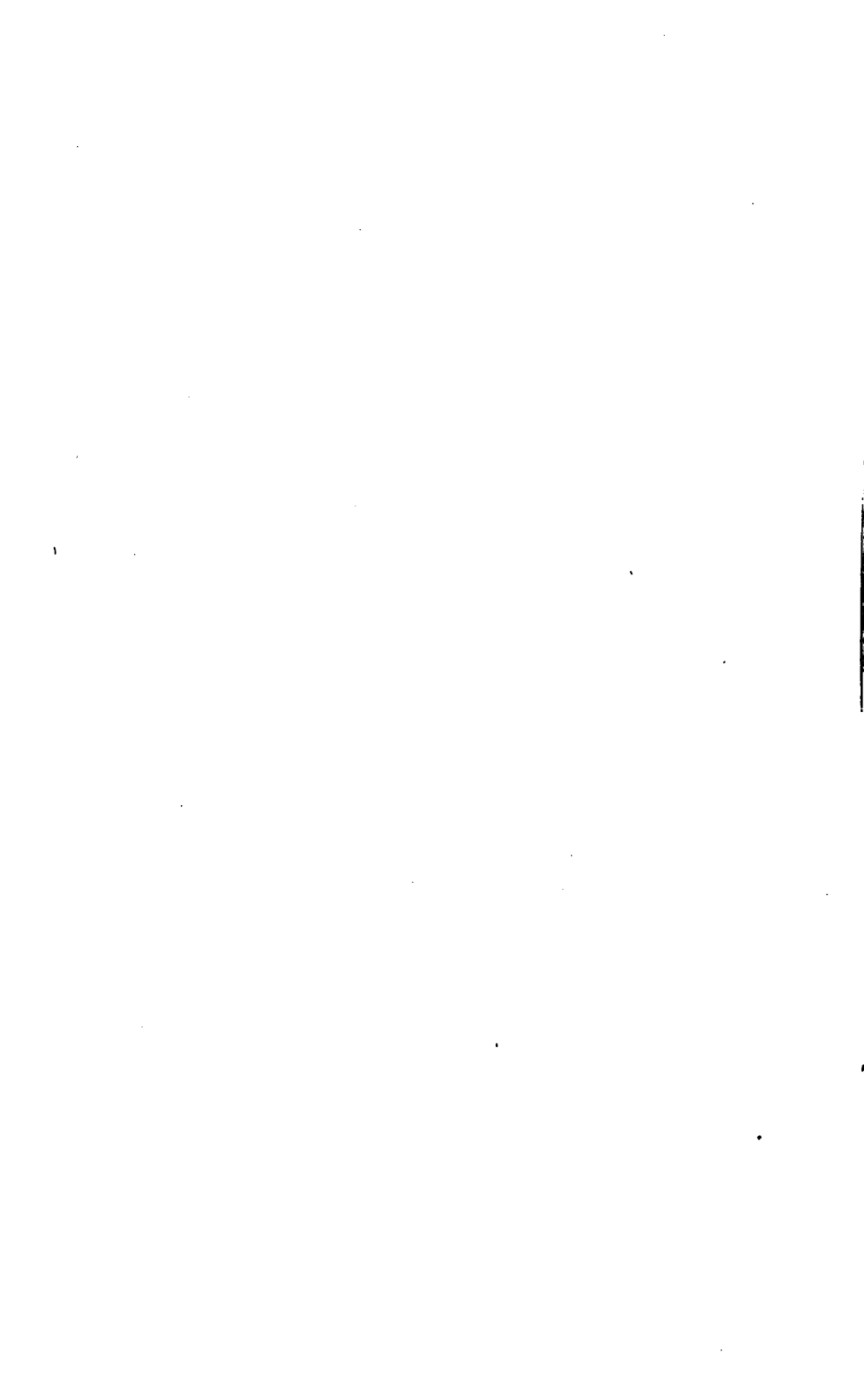
Lieutenant-Governor and Commander-in-Chief in and over Her
Majesty's Province of Nova-Scotia, &c. &c. &c.,

This volume.

Is respectfully dedicated,

By

THE AUTHOR.



PREFACE.

THE nature of this work is proclaimed on its title page.

At a period, when the Old World is convulsed by fearful Revolutions, many of her inhabitants will look for relief to the wide-spread regions of British America, and to countries within the scope, protection, and freedom, so long enjoyed and maintained by the noble constitution of our Parent State.

Great Britain herself is burdened by an overgrown population, among whom, the want of full employment excites disaffection, and gives rise to pauperism, crime, and starvation.

To her unemployed capital and labor, the British Colonies offer the best and most effectual reward and relief; and while the remedy would lighten the burdens of millions of our fellow subjects, it would also augment the value and importance of an extensive portion of the Empire.

To open new channels of industry—to apply labor to the relief of distress—to arouse dormant enterprize—to occupy, improve, and cultivate her colonies—extending the blessings of civilization, and increasing human happiness, are objects worthy of the Nation's regard, and the strenuous efforts of every British subject. Every aim towards this mark deserves encour-

ragement,—every advancing step towards this point should be cheered, until the primitive forests of this country shall ring with the sound of the axe—the ocean shall yield up abundant supplies of food—the earth its minerals, and the soil the varied productions of agriculture.

The first exports of every new country are simple objects in their natural state. Time is required to unfold hidden wealth, and to adopt the appliances of manufacture.

Up to the present day, the resources, and consequently the value of British America, are but imperfectly known, either at home or abroad. From an imperfect knowledge of these Provinces, treaties have been made with foreign States injurious to their interests, and there is a prevailing ignorance of their capabilities. Even their own inhabitants are unacquainted with the physical resources around them, and the means required to bring them into successful operation. Nor is it presumed that the following treatise comprehends all the elements to which industry may be successfully applied in Nova Scotia. In a new, extensive, and almost unexplored country, patient and continued research are necessary to reveal all its natural wealth.

The colossean public improvements contemplated by the Home and Colonial Governments, and by persons of all ranks, for these Provinces, in the construction of Railways and Electric Telegraphs, impart to them new features. In future, their social condition, safety, and welfare, will depend upon the success of such enterprizes, and the adaptation of the means placed at their disposal to the purposes of industry and commerce.

Nova Scotia contains abundantly the elements that invite labor and promise wealth. To their description the author has devoted his best ability. He is a native of the Province, and having applied himself upwards of twenty years to the examination of its natural productions, he has no hesitation in communicating the result of his labor, to which himself, or others, may hereafter add each succeeding discovery.

A climate in which the grape, the peach, the quince, and other exotics come to perfection, has been unsparingly condemned. The country has been represented as having neither spring nor autumn, but ever doomed to endure the extremes of heat and cold. These, and similar errors, deserve the correction experience has afforded.

Besides a good agricultural surface, the Province contains inexhaustable supplies of coal, iron, and other minerals, and her bays and estuaries are the most productive fisheries in the world.

As no general description of these and many other resources has ever before appeared, the present work is offered as a pioneer to more elaborate discoveries.

I avail myself of this medium to express a deep sense of obligation to the gallant Earl of Dundonald, to whom I am indebted for an actual inspection of the principal parts of Cape Breton, and its valuable mineral deposits.

Some of the commercial tables could not be obtained until the publication of the work was much advanced. These tables, with a notice of the claims of the Barons of Nova Scotia, and extracts from the reports on the Halifax and Quebec Railway, are inserted in the Appendix. My acknowledgments are due to the Surveyor General, and Mr. Henry of the Crown Lands

Department, for aid in compiling the map; also to the officers of Her Majesty's Customs at Halifax, for tables of exports; and to a number of gentlemen throughout the Province, who have volunteered their services as agents in the sale of this volume.

The drawing at the close of the chapter on the Geology of the Province, is from the pencil of Mrs. Elliot, and was presented to me by the late the Honorable T. N. Jeffery.

A few unimportant typographical errors that may be discovered, with any other imperfections, are left to the consideration of the candid and indulgent reader.

A. GESNER.

HALIFAX, 1849.

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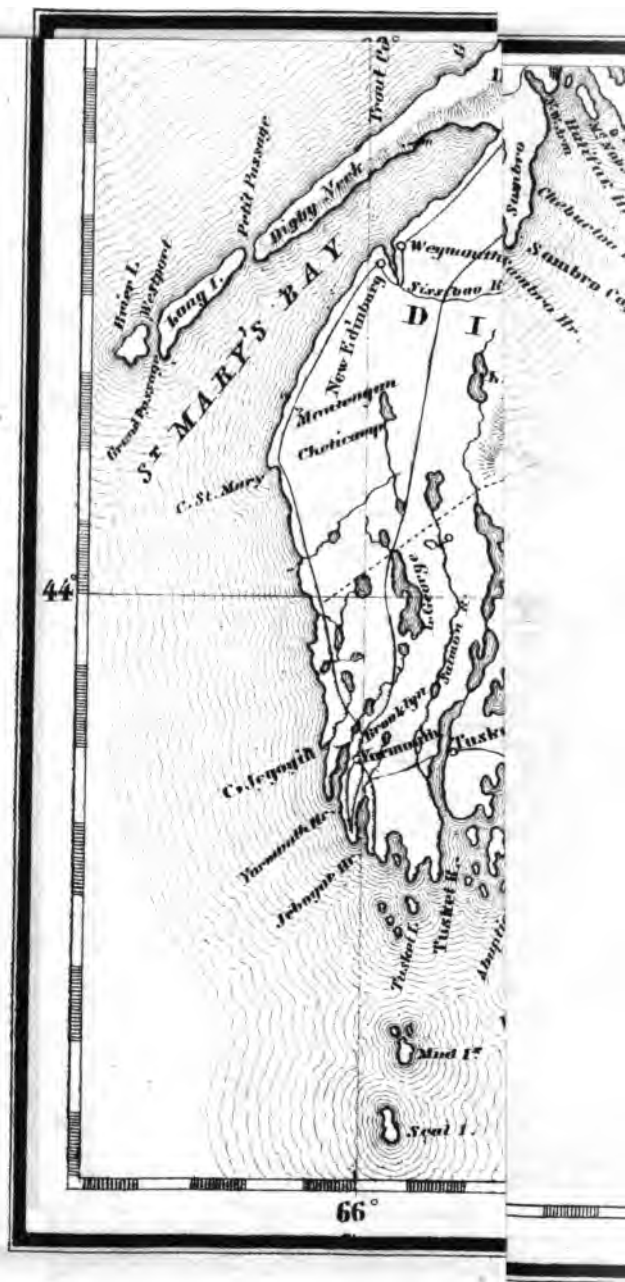
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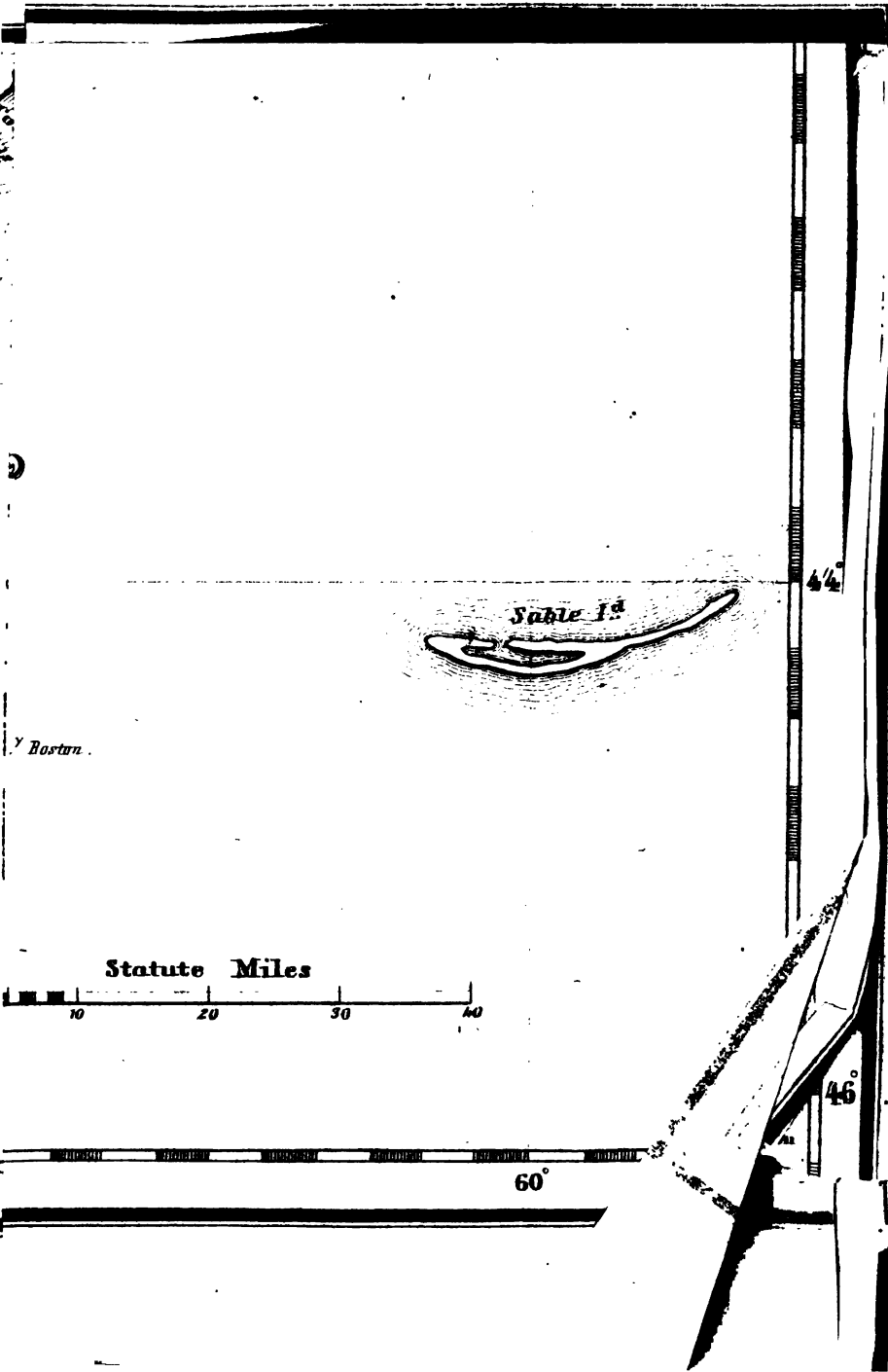
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THE
INDUSTRIAL RESOURCES
OF
NOVA-SCOTIA.

CHAPTER I.

Introduction—Historical and general notice—Former and present state of industry—Projected improvements, &c. of Nova-Scotia—Early inhabitants—French, New Englanders, and Loyalists.

THE early history of Acadia, or Nova-Scotia, details a series of conflicts between Great Britain and France, who each claimed the colony by right of discovery and occupation. The aborigines of the country were converted to christianity by the exertions of the Jesuit priests, and thereby they were, and still continue to be, attached to the Roman Catholic religion. They were also the allies of France until they were conquered, and brought into submission by the overthrow of French power in North America.

At an early period the number of Indian warriors was not less than 3,000. This warlike people, and the first French settlers, formed a powerful barrier to the introduction of British colonists. And even after the Acadians had taken the oath of allegiance to Great Britain, and were therefore called French neutrals,

they had always believed that ultimately their countrymen would be the conquerors of the wide-spread regions of the continent: and with that mistaken view they were led into errors that proved fatal to their interests.

DeMonts, LaTour, Denys, and others of the French nobility, had obtained extensive grants of territory in Acadia*; but, from feuds and jealousies among themselves, they were unable to maintain a safe foothold upon the soil. On the part of Great Britain there were also individuals who were fond of transatlantic enterprise; and in 1625 Charles I gave a *novodamus*, or renewal of a former patent to the Earl of Stirling, of a vast territory extending from the St. Croix to the St. Lawrence.—It is upon this patent the baronets of Nova-Scotia still claim title to lands in Nova-Scotia and New Brunswick.† The latter, in 1784, was constituted a separate province.

Although ancient Acadia had been several times transferred by treaty from one power to another, and had been the theatre of desperate struggles for territory, it had not been conquered; for the native Micmac Indians had never submitted to any foreign au-

* In the commission of DeMonts, Nova-Scotia is called Cadie. *Nous estans dès long temps informer de la situation et condition des p̄is et territoires de la Cadie, &c.* It was afterwards called by the French voyageurs L'Acadie. In the Micmac Indian dialect *ākāde* signifies a place. Thus *Anglishouākāde* means a place where Englishmen reside, *Wenjouākāde* a place where French people live, or a French settlement. The *Shubenacadie* is called by the natives *Saagaabenācāde*, a place where their favourite root, the *Sagaaban*, grows: thus the origin of the term *Shubenacadie* now applied to the river, where those roots were formerly very abundant. The terms *Cadie* and *L'Acadie* have evidently been derived from the Micmac *ākāde*—a place.

† See Appendix A.

thority. It was not until after the destruction of Louisburg—the conquest of Quebec, under the brave Wolfe—and the expulsion of the chief part of the French Acadians, that the Indians surrendered. In 1761 they signed a treaty of peace at Halifax. The terms of that treaty they have respected ever since; but it will be seen hereafter that the promises made to their chiefs have not been fulfilled by the descendants of their conquerors.

In 1763 France resigned all her claims in North America to Britain, who now holds undisturbed possession of the northern part of the great continent.

The early *voyageurs* to America soon became acquainted with the value of Nova-Scotia. Its geographical position, soil, fisheries, minerals, furs, and other resources, aroused their enterprize; and the climate and scenery called forth their warmest admiration.—Along the whole Atlantic coast there was not found a country, in their estimation, so valuable in the bounties of nature, nor so rich in the elements of industry, as their favorite Acadia.

In 1598 the number of fishing vessels upon the coast was no less than 330. The French and English also carried on a valuable trade in furs, and in the teeth of the walrus, or sea cow. At this period the existence of mineral wealth, the value of the timber, and nature of the soil and climate, were almost unknown. In 1604 DeMonts visited the Bay of Fundy, and discovered the native copper of Cape D'Or, and the ores and gems of Parrsboro' and Cape Blowmedon. The French immigrants also begun to cultivate the soil near Port Royal, since called Annapolis in honor of Queen Anne. And the great abundance of fish in the waters, game in the forests, and wild fowl upon

the lakes and rivers, afforded them a comfortable subsistence, with little labor.

Notwithstanding the changes in their political relations to the crowns of England and France, the French had established large settlements upon the borders of the principal streams, and especially at the sites of the great marshes. Besides their settlement at Annapolis, they had flourishing villages at (Minas) Cornwallis and Horton, (Pemaquid) Windsor, (Chignecto) Cumberland, and on the banks of the Shubenacadie. They had diked tracts of the fertile marsh alluviums, planted orchards of fruit trees—remnants of which still survive, and erected chapels. Their houses were clustered together in small villages, and each was the abode of frugality and contentment.—Their communications with the native Indians had lowered the standard of civilization among them, and the labors of their priests had raised the savage natives in some degree above the extremes of barbarity.

The number of Acadians in 1755 was 18,000: they owned upwards of 60,000 head of horned cattle, and had large tracts under cultivation. But, while they were in the enjoyment of perfect freedom under the British flag, they unfortunately aided and succoured the unconquered Indians in their attacks upon the English settlements. For this offence the chief part of their number was expelled from the country—their dikes cut away, lands confiscated, their villages burnt, and overwhelming misery and distress poured into every family. After a final peace had been concluded with France, the British Government made laudable efforts to restore these people to their former happy condition: but many of them had perished,—only a part of the exiles ever returned; and, therefore, the

early French colonists never regained their former flourishing position.

During these unhappy periods no advancement was made in the general improvement of the country,—indeed, to the contrary : its infant villages had been destroyed, and their inhabitants dispersed. The Indians were still the terror of the British settler, who, in removing the forests, was compelled to carry an axe in one hand and a musket in the other. The state of the New England provinces, and the western colonies, was much more favorable ; for, after they had subdued the natives, they enjoyed peace, and the first immigrant settlements were not broken up and destroyed. It is proper for those who constantly refer to the greater success of the British colonists in the United States, to recollect that none of those had to contend with the peculiar obstacles that retarded the early prosperity of Nova-Scotia. It is true they had to withstand the savage warfare of the aborigines ; but, in general, they were free from that disaffection among themselves that proved so fatal to the success of Acadia.

The first settlers in Nova-Scotia were not a people of enterprize : their pursuits were at the commencement altogether rural ; and many of them adopted the habits of the Indians, and followed hunting and trapping. The slow progress the Acadian French have made in the art of agriculture, at once shows their inferiority to the English, who have lined the western Atlantic shores with towns and villages, and spread cultivation over the surface far into the interior of the country.

Previous to the war that secured Nova-Scotia to the English, nearly 1,500 Germans emigrated to the coun-

ty of Lunenburg, under the encouragement offered them by George II. The cultivated fields and diked marshes of the expelled Acadians, were offered by the government to any who would occupy them, and pay an annual quit-rent of one shilling per acre. Boston, Rhode Island, Plymouth, and New London, supplied 580 emigrants, to whom 200 were added from Ireland. In 1772 the total number of inhabitants of Nova-Scotia, as reported to the Board of Trade, was 18,300.

The immigrants from the above places were a peculiar people, by no means remarkable for their industry or enterprize. They had been allured by the liberal offers of the Government, upon whose bounty they depended, rather than upon their own exertions. Although, as a body, they were moral, they soon acquired habits unfavourable to the rapid and general improvement of the country. From the abundance of fish and game of all kinds, many of them gave themselves to hunting ; and the achievements of the " old proprietors," and especially their long spun bear stories, have been carefully handed down to their descendants. All their guns were named ; and in some parts of the country you still find old French muskets called " Long Sal, Spitfire, Betsy, Indian Pill Box, Martin Luther, Cromwell, &c." Tracts of land were sometimes given in barter for a gun. In King's County eight acres of diked marsh, now worth £25 per acre, were exchanged for a dog. Mocassins, guns, hatchets, snowshoes, and powder horns, were the most desirable objects of these people—whole families of whom became hunters and trappers ; and to many of their descendants the sight of a fox or a bear's track is still a sufficient

inducement for them to quit the plough and follow the chase.*

* Some of the peculiarities of these people are displayed in the following true story, as related by J. M——, a descendant of the old New England Stock. He says: One day, I suppose the snow was about three foot deep, in March, Tommy and I went out to cut broomsticks. Nothing would do but old Streakit (a hound) knawed off his tether and come along too. Well, while I was cutting a little ash—you know the kind of ash—I heerd a noise. Says I, Tommy, that's the old dog. There is something in the wind, I'll bet you a big apple. Pooh, says Tommy. Well, by and by we heerd the old sarpent rip out like a lion. What say now Tommy, says I. Says he, the old rap is barking at a squirrel, or one of them dumb bristley porcupines. I know the music better than that, says I. Well, by and by we thought wee'd just go where the old rap was, and there he was pawing and howling, and snorting, like a whirlwind. Well, we looked a bit, and what should I see but a little hole under the root of an old yaller birch. Says Tommy, do you smell the bear steam? I guess I do, says I, and I guess wee'l have a small kickamaroo. Run home Tommy, and bring old brimstone (a very long gun). Away went Tommy, and as soon as he got home he had to send away for old Aunt Peggy. And then I waited at the bear's hole till my legs were as stiff as bean poles: howsomever he come back at last. Well, we cut away a hole big enough to peep in. There lay Bruin shewing his ivory, you may depend.—Well, I jist sent a ball and ten buckshot through his mazzard, and with a hooked limb we soon forked my joker out of the hole. Well, while I was hauling him out I dropped my jackknife into the place—I stooped down to pick it up, but whew, what does I see but two balls of fire.—You may depend I jumped. Says I, Tommy, there is another. Haw, haw, says Tommy, that's the nest egg. Well we soon made a dead prisoner of the other chap, and pulled him out. Well it beat everything. The old dog got into the hole then, but was soon turned out doors by another real old whopper. Well, we could not shoot this joker, he was so far back in the den; so we cleared away the opening, and I crawled softly into the place, and if you had only seen how the feller flaired up, when I paid my respects to him with Tommy's old butcher knife; but before I fixed him, the tormented crittur tore off both the tails of a bran new coat made by a tailor. Well, we got a sled and carried them home, and when we got there Tommy's wife had two twins, and we had three bears atween us. Why, they talk about agricultur in this country! Why, Tommy and I raised more out of that little hole in the airth in an hour, than Uncle Silas can raise from an acre in a whole summer.

Without any reference to the moral and orderly habits of these people, it is certain they were far from possessing that energy and industry that characterized the early inhabitants of the New England States.— During a considerable period after 1772, the colony declined ; and as late as 1781, the population was estimated not to exceed 12,000. At the close of the American Revolution, in 1783, a great number of refugees settled in Nova-Scotia : to these were added many officers and soldiers of disbanded regiments. In 1784 the population of Nova-Scotia, New Brunswick, and Prince Edward's Island, was only 32,000. In this new population there were persons of property, learning, and high respectability, by whom the foundations of education and industry were laid. By this body the Colonial Government was established ; and, by its loyalty, it still continues to bind the province to the mother country.

Notwithstanding all the virtues of the first colonists of Nova-Scotia, they were a people whose previous modes of life had disqualified them for the settlement of a new country. The pursuits and habits of officers and soldiers of the British Army had unfitted them for the labor required by agriculture ; and citizens from the west were unprepared for the hardships incident to a life in the forest. It was not until the descendants of these people sprang up that the country began to put on a cheering aspect. This hardy race of men are now beginning to display the agricultural capabilities of the lands adopted by their forefathers.

Many of the early settlers had bled in the service of the Crown—many had sustained the loss of their property, from their attachment to the parent country ; and others, from the promises held out to them by the Go-

vernment, placed their chief dependance upon her bounties. These circumstances tended to relax the efforts of the inhabitants in the improvement of the resources of the country. It was equally unfortunate that the generous system then acted upon by the Sovereign laid the foundation of numerous claims. There was a time when almost every family in Nova-Scotia sought some reward or bounty from the government. Almost every man thought himself entitled to some gratuity, or office. A general desire for public situations has continued, and since given rise to much discord and party spirit. Not so with the inhabitants of the revolted colonies of the United States : they were weaned and cut off from all the bounties and patronage of the mother country, and compelled, by necessity, to apply to their own labour and enterprize—by which they have exceeded the people of the provinces in wealth and general improvement.

It has been frequently imputed to the inhabitants of Nova-Scotia that they have less perseverance, enterprize, and industry, than the Americans of the republic. Admitting the correctness of this opinion, it should be remembered that very many of her early settlers were several years engaged in the defence of their country : and many of them, on account of their loyalty, abandoned the cultivated fields of their forefathers in the now United States, to cut down the forest a second time in order to win a living. They were an exiled people, who had to encounter all the difficulties of colonization in a climate unmodified by the spreading out of cleared fields and the redemption of extensive marshes. The soldier had to lay down his musket and seize the axe. The citizen was driven from his town luxuries to the hard fare of the

backwoodsman; and the brave officer who had fought his score of battles, hung his sword against the wall and laid his hand to the plough. That the services of such men have not been duly respected by the British government, is a painful and humiliating fact.—The bounties of the Crown of late have been given to appease the disaffected, rather than to reward the faithful; and if ever the British colonies are cut off from the parent kingdom, in this heart-burning evil will be found the cause of the separation.

At the close of the American Revolution the inhabitants of the revolted colonies had an almost boundless field for the expansion of their energies; and every soldier and sufferer in their cause was amply rewarded. Far different was the situation of the British loyalist—he had to begin the world anew; if, therefore, the people of the provinces have not kept way with those of the United States, an ample excuse is afforded them.

There is yet another and most obvious reason why Nova-Scotia has not advanced in a degree proportionate to her resources. Up to the present time, the extent and value of the natural productions of the province are almost unknown in every part of Europe.—The current of emigration has been directed to Canada and the United States: and volume after volume has been published in praise of those countries. Excepting the History of Nova-Scotia, written many years ago, and a work by the author on the Geology and Mineralogy of the province, little has been said of this fine colony. If we look to Canada, we find that, besides a large revenue, a vast amount of British capital has there been applied to canals, railways, and other public works. Not only have these sums of

money produced the ordinary advantages arising from such improvements, but they have supplied the best stimulus to industry to almost every inhabitant, and general advantage has been the result. These remarks are still more applicable to the United States, where millions of British capital have been devoted to the benefit of the commonwealth. To such countries the tide of emigration has been directed, and still continues to flow, while from Nova-Scotia, where there is a lack of labor, many of the young native-born farmers and mechanics annually depart, to seek a living farther west. It is, indeed, to be regretted, that large sums taken from British funds should have been expended in a foreign country, where, in some instances, their repayment has been repudiated : while the same capital might have been profitably disposed of in the British Provinces, where it would have increased the strength of a valuable part of the empire. But it is in vain to hope for an influx of money into the country, until her resources are fairly disclosed. The objects to which money can be profitably applied, must first be made known, before any hope can be entertained of their being rendered useful in themselves, and doubly useful by the capital they draw in from abroad. With such views the Americans have made examinations and surveys of every part of the Union from the St. Croix to Oregon. Annual inquiries are made in every department of industry. Every State has its geologists, botanists, chemists, agriculturists, and civil engineers, who are paid from the public treasury. Almost every natural production of their country has been collected ; and a spirit of energy has been infused into every branch of labor.

Here, then, is another reason why the republic is in

advance of the British provinces. In Nova-Scotia no public inquiry has ever been made in reference to the natural productions and resources of the country.— Their discovery and application have been left to accident, and the unrequited efforts of a few private individuals. The examples of the mother country and the United States have been disregarded, and the true objects of provincial wealth and happiness still remain unfolded. It is universally admitted that the best interests of the country have been neglected ; its industry languishes, and its vast resources remain unimproved.

The prodigious undertakings of the Americans in canals, railways, electric telegraphs, and other public works ; and also the rapid increase of manufactures in the western States, have created an extraordinary demand for labor. The cleverness and skill of the provincial are equal to the wants of his neighbours over the boundary, with whom he finds ready employment, high wages, and prompt payment ; the result is that the young men of the province emigrate to the United States as soon as they are of age, and much of the bone and sinew of the country is transferred over to a foreign power. Many whole families also remove annually from Nova-Scotia to the American far west.*

* The number of young men who emigrated from Nova-Scotia for the United States, in 1847, I have stated, upon very good authority, to be—

From King's County, - - - - -	100
" Cumberland, - - - - -	60
" Annapolis, Digby, and Yarmouth, - - -	160
" Shelburne, Liverpool, and Lunenburg, - -	130
" Hants and Colchester, - - - - -	90
" Other Counties, - - - - -	200
Of fishermen from the shores of the province, - -	300

Total, 1040

The number of young men and young women who will have emigrated from the province in 1848, will exceed 8,000.

In return for the annual loss of a valuable part of the population, we receive a few "speculators," who seldom remain stationary. Now it is of much importance to the province that she should check this kind of emigration by opening such employment as will induce her sons to remain at home; for the pauper emigrants from Ireland can never supply the loss of the native born Nova-Scotians; and the longer this misfortune is allowed to operate the more difficult will it be to remedy. Nova-Scotia offers as many, if not more of the elements of industry and enterprise as any portion of the United States; and it is only necessary that those elements should be submitted to the operations of British capital, science, and skill, to raise the province to its proper position, and to afford her own, and even a far greater population, substantial independence.

The price of labor will always be high when land is cheap. No sooner does the "hired man" or the mechanic secure to himself the price of a hundred acres, than he becomes a master instead of remaining a servant. The vast western territory of the United States and Canada, offers abundant space for the ever moving population, whose places, as they roll on towards the setting sun, are filled up by the untrained masses of the mother country—who, after they have discovered the peculiarities of their new home, in their turn make room for new supplies of "hewers of wood and drawers of water." The high price of labor produced by the above cause, and the construction of extensive public works in the United States, draws from us our best labouring men, the agriculture of the province suffers accordingly; and while the farmer of the eastern States finds ample markets for his produce,

the lack of demand for such produce, and difficulty of transportation, discourages the provincial agriculturist, who leaves the boundary between the field and the forest unmoved.

The encroachments made upon the fisheries by the French and Americans, have been a check to our commerce. The little islands of St. Pierre's and Miquelon, still held by the former on the border of Newfoundland, give them a foothold in the very centre of our best fishing ground, and every facility for infringing upon the stipulations of an unpolitic treaty. The aggressions committed yearly have enriched two foreign powers, whose subjects unite in driving from the banks and shoals the provincial adventurer.

In this fine province there is neither a canal, nor a railway, excepting six miles of the latter at Pictou, laid down for mining purposes. Nova-Scotia is rivalled in steam navigation by the sister province New Brunswick, where the coal employed is imported from Great Britain. She is also far behind that province in manufactures, mills, and sawing machinery. It is universally admitted that her fisheries are neglected; and her most valuable mines, with one exception only, remain unopened. From the cost and scarcity of labor, the want of markets, lack of proper means of transportation, and other causes, the agriculture of the province is retarded, manufactures improve but slowly, and the clearing of the wilderness advances at a tardy rate; notwithstanding the legislature readily opens roads to new settlements, and wild lands may be obtained at three shillings and three pence per acre. Nor is the state of education what it should be in a province that abounds in colleges and public seminaries. There is little enterprise in any pursuit. A spirit of extreme

caution influences the rich ; men of medium wealth are discouraged ; and to this may be added a lack of general and persevering industry, with a desire for ease and extravagance. Whoever has travelled through Nova-Scotia and the western States, could not have failed in observing the favourable change noticed by the late Lord Durham, after crossing the boundary.—The trade of the Americans is more brisk : they have better markets, and a business energy pervades the whole mass of the population. The implements of husbandry are of the most approved kinds, and there is no lack of labor-saving machinery. The rural districts display a neatness and comfort that exceed the best provincial villages, and their inhabitants enjoy a higher degree of comfort and independance than those of Nova-Scotia. These circumstances have arisen, not from the peculiarity of their government, which is essentially British, but from causes already noticed, and the stimulus afforded to every kind of labour by the hope and certainty of success. Now the resources of Nova-Scotia are richer, more varied and inexhaustable, than those of any of the western republican districts ; and they contain within themselves materials, that by being improved, would soon elevate the province to her proper position, and even above the neighbouring colonies. In their maritime department also, the Americans display a decided superiority : their fishing and coasting vessels are better built, found, and supplied ; their crews are more temperate, better clad, and have a more lively interest in the success of their voyages, than the more careless sailors of the east. In fishing they are remarkably expert ; and nothing that ingenuity and economy can devise is lacking to render their trip to the deep sea successful.

A most vigorous spirit of enterprize and speculation has extended itself to every quarter of the globe. In Europe, America, and the West India Islands, railways and electric telegraphs are being laid in all directions, abbreviating space, and saving time. 2,000 miles of the telegraph are already in operation in North America; and nearly 5,000 miles are in process of construction. The great oceans of the globe are freely navigated by steam; and a new era has dawned upon the whole world. It has been proposed to run a line of railway from Halifax to Quebec; and the survey of the route has been completed by the home government. This is an object worthy the best support of the British nation, and all the North American colonies. A line to intersect the isthmus between Halifax and Windsor, is also under consideration; and, if completed, could not fail to be profitable to its shareholders, and of incalculable advantage to the northern and western counties, as well as the metropolis.

The time has arrived when it has become necessary to direct the public attention to the industrial resources of Nova-Scotia; for it is to such objects the inhabitants must apply their labor, to meet the great outlay required for those costly undertakings. Great Britain is desirous to cherish the spirit of improvement in her colonial territory, whose natural productions are not inferior in value to those of the parent country. The resources of British America, when once acted upon by an anglo-saxon population, will produce a New Britain on this side of the Atlantic.—In these colonies millions of British subjects must hereafter find a home—where the greatness of the race is destined to expand itself, and add new lustre to the Crown and glory to the nation. The estab-

lishment of railways is indispensable to the improvement of the physical resources and industry of the country. They are the mainsprings of colonization; but unless the government enter deeply into such improvements, justly viewing them as safeguards to these colonies, the struggles of the inhabitants themselves will be unavailing, and Nova-Scotia will languish through centuries to come. In the noble work of liberating the West India slaves, the government paid twenty millions sterling. To liberate from misery, and to supply the means of obtaining food for the famishing redundant population of Britain, is surely no less worthy of her exalted benevolence. The application of five millions, devoted to public works in these provinces, would spread a table in the wilderness, and feed with bread and meat the emaciated thousands and tens of thousands that now burden their home country. A line of electric telegraph between Halifax and Quebec has been commenced, and when the work is completed, it will greatly facilitate the communication between the upper provinces and the capital of Nova-Scotia, the first discharging port of the British steamers.

The post roads, and other principal lines to and through the towns and villages of the province, are in a good state, and the inhabitants pass to the most remote settlements with facility. The Halifax and Quebec railway, when completed, would also open some new, but at present, almost inaccessible tracts of good land; but, to open the interior country, and many of its physical objects to the operations of the immigrant and new settler, several extensive turnpikes are required. One of these should extend from Halifax, as direct as possible, to Annapolis, through

the central part of the isthmus between the Bay of Fundy and the Atlantic coast. This road would cross numerous streams that might at first be applied to sawing the forest trees, and finally to other manufactures. Much of the land in this quarter is of a good quality; and almost all the slopes and valies may be successfully cultivated. At present the whole of the district may be said to be uninhabited; and very extensive tracts still remain ungranted. This, the great moose yard of the province, would afford employment, and a comfortable maintainance, to 50,000 souls. There would then be three great roads—one on each side, and one in the centre of the western part of the peninsula—which has an average breadth of 50 miles, and a length of 120 miles. The middle part of this great area is still covered by the native wilderness, in which there is much pine, spruce, maple, oak, and other kinds of valuable timber.

A road extending from Halifax, through a similar tract of country, to Guysboro' and Antigonish, through Musquodoboit, is in the course of construction; and others through the wilderness portions of the eastern counties, would promote the internal settlement of the country. If, however, the young and labouring part of the population have no inducements offered them to establish themselves in their native province, and there is never to be a sound and healthy immigration into Nova-Scotia, a century may elapse before such improvements are required. But the commencement of a wise system of internal improvement would soon change every unfavourable feature of the country; and a railway between Halifax and Quebec would be the certain means of bringing about these collateral advantages.

Coeval with such works, there would be a speedy advancement of agriculture. The facilities for obtaining remunerating prices, and the demand that would be created for food, now transported on carts and waggons a hundred miles to a single and frequently glutted market, would immediately stimulate the farmer to clear away the rubbish from the now worthless field, and cultivate the mellow alluviums overgrown with ferns and alders.

The fisheries would also feel the general impulse ; but, the first great step to their improvement, is the prevention of French and American aggression—a subject that has already required legislative interference, and still calls loudly for strenuous advocacy. The Americans have long given bounties to their fishermen ; nor can there be any doubt that similar encouragement offered by the government of the province to her own people would return more than adequate benefit.

Besides the resources that Nova-Scotia possesses in common with the sister colonies, the province abounds in the most valuable minerals. The iron and other mines that have been accidentally discovered, will be treated of in another chapter. None of these mines are worked, for the British capitalist is chary in the erection of smelting furnaces, in the present state of the colony. What would Nova-Scotia be under the full improvement of such resources ? Why, her now unproductive and vacant wilderness lands would pour down to the sea-board immense supplies of grain, and other agricultural produce ; our small towns would rise into places of note, with whole streets of shops ; our rivers would be the seats of manufactures ; our bays and harbours would swarm with ships, transport-

ing our coal and other minerals abroad. Upon our own soil iron could be smelted and manufactured for home consumption and exportation. The fisheries would be rendered profitable, and the whole country assume the cheering aspect of prosperity. Our intercourse by railway with the neighbouring provinces, would unite us all in one common interest. Our colonial and foreign trade would expand, and every branch of industry would feel its effects : then, indeed, our public works would pay. We would cease to hear of the rivalry of our neighbours, and the reproaches that are now cast upon the country for its lack of enterprize.

The declaration may again be made, that the objects to which capital may be successfully applied are as numerous in the British provinces as they are in any of the United States, which have heretofore drawn largely from the inactive funds of the mother country. The very essence of national strength and greatness has been handed over to a foreign power, and in many instances lost to its rightful owners, and lost to the country under whose salutary laws, and enduring energies it was accumulated. To direct a rational and proper course for the surplus funds of the United Kingdom ; to open in British America an asylum for her starving labourers ; to promote by judicious public works the strength and security of her colonies, are deserving of the first consideration of the government, and the most powerful redeeming efforts of the nation. Millions of acres of British soil, on this side of the Atlantic, remain shaded by the native wilderness ; and, excepting the timber, which may be felled and shipped as well by the native Indians as the experienced mechanic, the best sources of wealth and

comfort are almost disregarded ; and, a country teeming with the bounties of Providence, scarcely feels upon its bosom the efforts of a scattered and unaided population. Where is our national pride ? Does the glory of Britain consist only in her naval and military achievements ? Has she conquered to save, and not to destroy ? Has she no sympathy for her swollen and starving yeomanry ? When will she learn and know the value of these American possessions, and endow her children with the imperishable riches of the west ? To bring down the productions of the interior country, and to carry back the required articles of manufacture ; to open the solitary wilderness and usher in human labor, is a work offered by Providence to a christian nation—to Britain, who requires no increase of territory on this side of the ocean, but rather the improvement of what is now her own and rightful heritage. To her it belongs

“ To traverse realms unknown, and blooming wilds,
And fruitful deserts—worlds of solitude,
Where the sun smiles, and seasons teem in vain,
Unseen and unenjoyed.”

CHAPTER II.

British America—Nova Scotia—Her Geographical position, Harbours, Bays, Rivers, Lakes—Bay of Fundy, Basin of Minas, Cumberland Bay and Basin—Southern Harbours—Northern Harbours—Waterford, Wallace, Tatmagouche, Pictou, Merigomish, Canseau, Whitehaven, Torbay, Country Harbour, St. Mary's, Halifax, Sambro, Margaret's Bay, Mahone Bay, Lunenburg, LaHave, Liverpool, Port Medway, Shelburne, Barrington, Pubnico, Tuskets, Jebogue, Yarmouth, Jeggogin, Annapolis Basin—Rivers, Annapolis, the Avon, Shubenacadie, &c.

THE British possessions in North America have been estimated to contain 3,500,000 square miles, or 1,940,000,000 acres. The population in 1844 was upwards of 1,600,000. It is now about 2,208,000; and there are upwards of 870 acres of land for every soul. The whole capital, or property, has been computed to be £75,000,000. The public revenue £1,600,000 per annum. The shipping tonnage exceeds 2,000,000 of tons; and the number of seamen and fishermen is 150,000. The amount of consumption of British manufactured goods, yearly, is equal to £7,000,000 sterling.

The most northern parts of this vast territory supply fish, oils, furs, and timber. The climate, soil, and natural productions of its whole southern portion, are equal to those of Great Britain. The fisheries of the coasts, bays, and rivers, are the richest in the world. The physical capabilities of this region cannot be estimated in the present day, for they are still unknown.

In the possession of a British race, an almost boundless field is here spread out for the extension of civilization and happiness ; and almost every year discloses some new and valuable object of enterprize. The ports of the southern, or Atlantic shore, are open at all seasons of the year, which may be ascribed to the warmth of the water flowing in from the Gulph Stream, rather than the temperature of the climate. From having the northern ports sealed up by ice during the winter months, the necessity for railways is rendered more urgent : for by their aid, the trade with the north may be carried on at all seasons of the year. The coasts are studded with islands of various dimensions ; yet the rocks and shoals are not so numerous, that they put any check upon navigation. These shores are peculiarly favourable both for deep sea and shore fishery. They produce abundantly the crustaceous, moluscous, and other marine animals, animalculæ, exuvia, with submarine plants, upon which the large fish feed ; and the numerous bays, rivers, and lakes, afford security to the ova of the visiting tribes.

Of the vast area embraced by these Provinces, not more than one-fiftieth part has been cleared of its timber ; not one-hundredth part is under cultivation ; and the imagination can scarcely extend to the number of the population it is capable of sustaining—including the inhabitants of cities and towns that would spring up in the progress of time. As these provinces advance in improvement, the staple articles of Canada, New Brunswick, and Prince Edward's Island, must be agricultural produce, which will be exchanged for manufactured goods, and foreign productions ; but, besides a good agricultural surface, Nova-Scotia abounds

in inexhaustable mines, that are capable of affording immense exports, and the elements of manufacture. The timber is indeed of much importance: but every year will increase the cost of procuring it; and the lumbermen of Nova-Scotia are already compelled to resort to the remotest forests. So long as the crude materials will suffice for export, land will be cheap and plenty, and labor consequently high, there will be no manufacture of the finer articles of luxury. Including the taking of seals, the fisheries excel the timber trade. It is, indeed, true, that Nova-Scotia does not supply her own bread: but this fact, of which many speak with despondency, does not arise from the nature of the soil or climate. Not more than one half of the population are engaged in agriculture: the other half are employed in fishing, lumbering, and other pursuits. The price of labor, lack of railways, remunerating markets, and an imperfect system of tillage, impede the progress of husbandry; and the farmer is stimulated to raise little more than will supply his own wants. The demands for the gypsum, freestone, and grindstones of the province, are well supplied; but the market for coal frequently presents a vacuum, the result of limited mining.

Nova-Scotia forms part of Her Majesty's possessions in British America, and is situated between the 61° and $66^{\circ} 30'$ west longitude, and $43^{\circ} 25'$ and 46° north latitude. It is the southernmost part of the British American territory on the north Atlantic coast: it has therefore a milder climate than either New Brunswick or Lower Canada. It is almost surrounded by the sea, being separated from Prince Edward's Island, on the north-east, by a narrow straight; and at the north-west, from New Brunswick, by the Bay

of Fundy: on the north it is joined to the latter province by an isthmus about twelve miles wide. It has long been proposed to open a canal from the head of Cumberland Basin to Bay Verte, or Shediac, and thereby to unite the Bay of Fundy and the Gulph of St. Lawrence. Several routes have been surveyed. The last exploration by Captain Crawley, R. E., was unsatisfactory; and the contemplated introduction of railways has diverted the minds of the inhabitants from the undertaking. If the canal were opened, Nova-Scotia would be an island. The province is an oblong square, or rather it resembles in shape a mitten—the thumb of which is gently feeling New Brunswick. Its greatest length is 380 miles, and the breadth varies from 40 to 60 miles. From the northern angle to the Atlantic the distance exceeds 100 miles; and the land area is estimated at 9,534,196 of acres, or 15,700 square miles.

Besides the Bay of Fundy, which washes its north-western side, the province is indented by numerous bays, harbours, rivers, and creeks, which admit vessels of all tonnage. During the coldest season of winter the northern ports are closed by ice. The harbours of the southern, or Atlantic coast, are extremely convenient for British and American commerce; and the splendid haven of Halifax has always been the chief resort of ships of war upon the North American station.

There is considerable diversity in the aspect of the province: although there are but few hills that will exceed 600 feet in height, the features of some districts are alpine. The southern, or Atlantic side of Nova-Scotia, is comparatively low. Aspotagoen, near Margaret's Bay, is bold, but not lofty. The Ardoise

Hill, that commands one of the finest views in America, will scarcely exceed 700 feet in altitude. Blowmedon, the abrupt termination of the north mountains, as they are called, is 680 feet high, and forms a beautiful and striking feature of King's County. The north and south mountains, situated on both sides of the valley of King's and Annapolis, are merely hills; and the Cobequid range running through Cumberland, and Mount Thom, are not more elevated. The country is furrowed by long parallel ridges, that extend from the south-west to north-east, which is also the direction of the rocky strata. From the stony character of the shore, the whole southern coast has been called iron-bound; but it is indented by beautiful bays, and innumerable coves and inlets, that afford shelter to all kinds of vessels. The unceasing operations of the sea have notched the shores; the rocks have been scooped out, and rugged caves and grottoes have been formed even in masses of the hardest granite. The trap rocks on the border of the Bay of Fundy present a series of mural cliffs and overhanging precipices.

The north-eastern shores are low, being bordered chiefly by sandstones: the scenery is tame, and the harbours are comparatively shallow. The coast is smoother, and the lands are far better adapted to agriculture than those of the south. Almost the entire surface is channelled by the deep ravines and narrow gorges, which diversify the scenery, and give an idea to the traveller that the land is higher than it really is.

Between the north and south mountains there is an extensive and very fertile valley, 80 miles long, and, upon an average, 5 miles broad, stretching from the Basin of Mines, through King's and Annapolis counties, to the head of Annapolis Basin. The Shuben-

acadie, La Have, Avon, and Gaspereau, have their valleys. The valley of the Stewiacke is one of the most beautiful in the province. The streams of the eastern shores also run through tracts of flat land, and fertile intervalles. All the rivers emptying into the Bay of Fundy, and its terminating basins, are skirted by tracts of marine alluvium, which is overflowed by the high tides, except where they have been rescued from the sea by embankments. Above the limits of the sea the streams and lake outlets run through tracts of fresh water alluvium, known as intervalles: these are of two kinds, the high and the low—both are very fertile.

BAYS, HARBOURS, RIVERS, LAKES.

The Bay of Fundy was visited by DeMonts in 1604, and called by him LaBaye Francoise. It is 100 miles long, and 40 miles wide, and nearly separates Nova-Scotia from New Brunswick. It terminates in two smaller bays, namely—Chignecto or Cumberland Basin, and Minas Basin. The latter is upwards of 50 in length, its greatest breadth being about 30 miles.—It is a beautiful sheet of water, expanded into the central part of the province; and, with its numerous rivers, it affords great facilities for trade with the United States and New Brunswick; but not with Halifax, with which, as already proposed, it should be united by railway. The extensive shores of this basin afford every advantage for ship-building; and at many points the land is uncleared, and supplies of ship-timber may be procured from the bordering hills.

These bays are remarkable for the elevation and rapidity of their tides, which, at the extremities of the

estuaries, rise 75 feet,* and in the narrow straits the currents run at the rate of 10 miles per hour. This great periodical elevation of the surface makes docks of all the creeks and rivers; and vessels are thoroughly repaired to their keels, between the high and low tides. They may also be placed in situations where they will be left dry 16 hours out of 24. During the recess of the tide vessels frequently lie aground several miles from the shore; and, at the head of Cobequid Bay, it is 12 miles from high water to low water mark. The advantages arising from this extraordinary influx and reflux of the sea are by no means inconsiderable. The extensive and fertile marshes are the gifts of the tides, which fill the estuaries with the fine sediment abraded from the rocks of the coast. Wares and nets are stretched along the beaches; and, at low water, the fish taken in them are removed in carts: but this fishing upon dry ground is much neglected; and of the shoals of herrings that frequent the shores, few are taken beyond the supply required by farmers living upon the borders of the flats.

Tide mills of great power may be erected, and it is surprising that so few of them have hitherto been put

* The following Table of the height of the Tides at different places in the Bay of Fundy, has been derived from correct sources :

Annapolis,	- - - - -	30 feet.
Apple River,	- - - - -	30 "
Basin of Minas,	- - - - -	60 "
Chignecto Bay,	- - - - -	60 "
Cape D'Or,	- - - - -	50 "
Cape Split,	- - - - -	55 "
Cape Blowmedon,	- - - - -	60 "
Head of Cumberland Bay,	- - - - -	71 "
Parrsboro', Partridge Island,	- - - - -	55 "
Shubenacadie River,	- - - - -	75 "
Truro,	- - - - -	72 "
Windsor,	- - - - -	60 "

in operation. In all the creeks and coves, which are sufficiently capacious for reservoirs, machinery may be propelled, and applied to any purpose. A dam, with a lock admitting the sea, vessels and rafts of timber, at high water, could be cheaply erected; and many cites can be found where the reservoirs would be fed by a brook or rivulet. The extremities of the headlands and capes are washed by very powerful currents. By very simple machinery these currents could be applied to the ringing of bells during foggy weather, giving the sailor warning of danger. Such machinery at some of the capes and other places in the Bay of Fundy, would be a valuable adjunct to light-houses; but at present there are neither lighthouses nor fog bells on the Nova-Scotia side of the bay, and the coasters pay taxes for lights their pilots never see.

The Severn and Mersey, of England; the Garonne, of France; and the Hoogley, near Calcutta, are celebrated for their bores.

At the head of Cobequid Bay the flood tide is preceded by an immense tidal wave, or bore, which, at spring tides, is sometimes six feet high. At low water nearly 60 square miles of sand, shingle, and mud flats, are laid bare: the flood rises more rapidly than the water can advance, and the result is the formation of a splendid wave, sometimes more than four miles long, which rolls over the flats and quick-sands in a sheet of foam, and with the roar of thunder, washing away, or burying up, every thing before it. Vessels lying with their broadsides to the bore are rolled over—their masts are broken, and they are left half buried in the shingle: the skill of the pilot is, however, equal to this danger, and accidents occur but seldom. The Petecodiac, and other rivers of Chig-

necto Bay, have their bores ; but they are less powerful than the mighty flood of the Shubenacadie.

The scenery at the entrance of Minas Basin is bold and picturesque. Blowmedon, Cape Split, Partridge Island, and Cape D'Or, with their lofty facades of trappean columns and overhanging cliffs, at once arrest the attention of the traveller, as he glides between these mountain masses, urged forward by the incredible fury of the tide. The submarine basaltes of Cape Split and "Dory," even in a calm day, break the surface of the water into frightful eddies and sheets of foam. The former is the malstreom of the Bay ; still the navigation is safe when intrusted to experienced pilots, who know their positions in the greatest darkness, and thickest fogs, by the peculiar sounds or "routes upon the shore," and "racket of the rips." The passage of a field of ice over one of these rips, in the winter season, is at once a grand and amusing spectacle. It was called by an American captain "about the greatest muss of a hoddy-doddy in all creation."

Nova-Scotia is one of the best watered regions in the world. Rivulets of pure water descend from every part of the higher grounds, and irrigate the whole face of the country. Besides these, innumerable springs break out along the terraced borders of the vallies, and many farms have a spring or brook in every field. The rivers are numerous ; but from the form and position of the country, they cannot be long in their courses, nor very capacious. This seeming disadvantage is compensated by the depth of the bays and basins at their mouths, by which navigation is extended into the centres of large districts.

The Avon, (the Mersey of Nova-Scotia), emptying

into the Bay of Fundy by Minas Basin, is one of the largest, although not the longest river of the province. It is three miles wide at its mouth, and navigable for ships to Windsor, 12 miles distant, where it is crossed by a lofty bridge. Small vessels and boats may ascend eight miles higher. The mouths of its tributaries—the St. Croix, Kennetcook, and Cocmagun—admit vessels several miles, and afford great facilities for shipping the gypsum so abundant along their banks. The deep indentations of the Avon and Bedford Basin, narrow the peninsula on a direct line to 20 miles. A railway between these two points, and which may be extended 9 miles further, to the city of Halifax, is now called for by the trade of the Bay of Fundy, and the demands of the western counties. The Annapolis, the next river of importance, drains a beautiful and fertile valley, opening into a spacious basin communicating with the Bay of Fundy, by Digby Strait. The basin and river are navigable thirty miles, to Bridgetown: they afford every facility for ship-building, an outlet for the produce of Annapolis and Digby; and if the mines of Moose River were worked, the iron might be readily shipped over the former to any part of the world. The herring fishery is also very valuable. De Monts, and his companion Potrincourt, the leaders of the early settlers, were charmed with the position and scenery of this basin and river; and as early as 1604 the French were established at Annapolis.

The Shubenacadie,* emptying into the head of Cobequid Bay, is also a fine stream, navigable for vessels 20 miles. The river springs from a lake midway between Truro and Halifax. A chain of lakes also

* From *nāgāban*, a root; and *ākāde*, a place.—*Micmac Indian*.

reaches to Dartmouth, and, in olden times, afforded the native Indians an almost uninterrupted water communication between the river and Halifax. There are 1000 acres of diked marsh on the banks of the Shubenacadie, and 2000 acres of excellent intervale above the flow of the tide. The principal tributaries are the Stiewacke, with 500 acres of diked marsh. Five Mile River, and St. Andrew's River, also have their alluvial vallies. Salmon, bass, alewives, and smelts, are taken in these streams.

In 1826 a company was formed at Halifax, to open a canal from Dartmouth to the Shubenacadie, through the lakes, and across their barriers. As nature had almost completed the communication, this project was undertaken with much spirit, and high expectations of success; but, like many other attempts at public improvement in these colonies, this enterprise, which cost £80,000, terminated in a failure, after the work itself had been nearly completed; and now that railways have succeeded canals, it is not probable that it will ever be resumed. The great error appears to have been the lavish expenditure of money upon works of masonry, that might have been chiefly constructed upon the American plan—the employment of brushwood, timber, and earth. Some engineering difficulties also appeared, that were not understood at the onset. A general panic seized the shareholders of the company, and they withdrew from an undertaking that was perfectly practicable. The fine masonry of the canal is now falling down; and a number of persons who had embarked their capital in the enterprise, have been nearly ruined. Should the Halifax and Quebec railway be laid, it will, no doubt, pass along the vallies of the lakes, and the Shubenacadie. The

fine cut granite of the canal locks may then be advantageously employed in the noble work, and thus a part of the great, but useless outlay, may be redeemed to permanent advantage. The fine masses of cut stone may be transported along the line as it is completed.

The failure of this undertaking, and the Annapolis iron works, have had a powerful tendency to discourage all enterprize of the kind ; and an opinion prevails up to the present moment, that it is too early to introduce any extensive public works, except common roads, into the province.

The head of Cobequid Bay also receives Salmon and North rivers, which discharge themselves into the head of the basin, in the beautiful districts of Truro and Onslow. The Chiganois, Folly, Debert, Economy, Five Island, and Partridge Island rivers, are all smaller streams, descending into the basin from the north. Their mouths are bordered by alluviums, and there are fine intervalles along the flanks of their valleys. On the opposite side of Minas Bay there are Pereau, Habitant, Cornwallis, Canard, and Horton rivers, which run through the rich alluviums of King's county. These streams are navigable from five to ten miles from their mouths ; and the Cornwallis river will give passage to steamboats twenty miles, although the navigation is altogether confined to its mouth at present. The Canard river has been closed by the Grand and Wellington dikes.

No less than twenty rivers fall into the basin. The resources of the districts they intersect, and of which they form a part, will be described hereafter. In their descent, they offer abundant power for the manufacture of the productions of the country. Besides ex-

tending the limits of navigation, they abound in those natural advantages, aptly termed "mill privileges," only a limited number of which have as yet been improved. Seen from any of the neighbouring hills, the landscape is one of the most splendid and varied in America. The shores of the land-locked Minas are indented by river mouths and coves, along whose banks cultivation has spread out its mantle of green. In autumn the rescued marshes, which had yielded their crops of clover and wheat, are covered with droves of cattle: while, at high water, vessels appear to be sailing among them in the display of some great exhibition. At a thousand points the native forest still reaches the cliffs, or the beveled edges of land; and, far away, the wilderness is dotted with the little clearings of the "new beginner." The rivers of King's and Hants counties appear like a large hand, with the fingers laid upon the fertile sides of the valleys, opening towards the shore. Villages, and long lines of comfortable white farm-houses, are stretched along the courses of the rivers; and here and there a church or chapel sends up its sharpened spire. With these are seen

"Majestic woods of every vigorous green,
Stage above stage, high waving o'er the hills;
Or to the far horizon, wide diffused,
A boundless deep, immensity of shade."

Chignecto Bay is also a fine sheet of water, terminating in Cumberland Basin, which separates the county from New Brunswick. The principal rivers opening into it from the Nova-Scotia side, are the Herbert, Maccan, Napan, LaPlanche, and the Missiquash. These streams are similar in their characters to those of Minas Basin. At their mouths there are no less

than 6000 acres of diked marsh, besides large tracts of sedge banks and mud flats, which are annually increasing, from constant collection of sediment brought in by the tides. From Cape Chignecto to Cumberland Basin, a distance of 40 miles, there is no harbour, except at Apple River ; and the shore is occupied by reefs of sandstone. That river affords shelter for the coasting vessels. The necessity for a light-house at its entrance, has hitherto been overlooked by the province, although frequently applied for by those who are interested in the navigation of the bay. Cumberland Basin (Beau Basin of the French) is a safe harbour ; but from the great elevation of the tides, vessels lie aground at low water. The above rivers are navigable each a few miles from its waters. Every facility is afforded for ship-building, and the exportation of the coal, gypsum, grindstones, and agricultural produce of this fine section of the country.

The French first discovered the value of this district, which has been the theatre of several sanguinary conflicts between the united Acadians and Indians, and the British Provincials. In 1750, M. LaCome, the French commandant in this quarter, built Fort Beau Sejour, at the mouth of the Missiquash. The English immediately erected another fort on the opposite side of the river, called Fort Lawrence, in honor of Major Lawrence. Beau Sejour was taken, and named Fort Cumberland. It has long since been abandoned as a military station, and the walls of its antagonist have fallen downward to the earth. The intrenchment is, however, still to be seen. The Provincials also erected a fort over one of the coal strata at the South Joggins. A part of this old battery has fallen over the cliff. The French forces had thrown up a

fort at the mouth of the Gaspereau at Bay Verte, and, with their Indian allies, they commanded the narrow isthmus between Nova-Scotia and New Brunswick.— This fortification contained an acre of ground, and was well built. The ancient turnpike and causeway, across a tract of marsh, still remain : a part of the moat is open ; and although the interior of the fortress is under cultivation, the walls have an elevation of eight feet. This, the stronghold of the French, was taken by Colonel Moncton in 1754. The tombstones erected at the place (since called Fort Moncton), all bear the date of 1755. The following has been rudely cut in a freestone slab, and stands at the head of a large grave :

“ Here lies the body of sergeant Maokay and eight men, killed and scalped by the Indians, in bringing firewood, Feby. 26th, 1755.”

It is evident from this monument that the fort was in the possession of the brave Provincials in the winter of 1755. Its capture took place in the preceding summer. These relics of former times are evidences of the perils to which the British soldier was exposed in the conquest of the country.

The harbours and rivers of the northern coast of the province are numerous and important. The tides here only rise a few feet, and are much influenced by the winds in the Gulph of St. Lawrence. The lands are low, and the streams are more sluggish than those of the southern coast. The banks of the River Philip, celebrated for its fine trout, have few inhabitants, and the water at its mouth is very shallow ; but the harbour of Pugwash,* or Waterford, only four miles

* The Micmac Indians called the River Philip Koos-soos-ti-boo-guac, (river where hemlock grows) ; and the Pugwash Koos-soos-ti-boo-guac-sis, or little river of hemlock.

distant, has 18 feet of water over its bar at low water, and the largest ships are received into a fine basin, where they lay afloat at all times of tide. The advantages of this harbour, and its neighbouring rivers; have produced a lively timber trade to the mother country, as well as the improvement of the soil, which is of superior quality.

Wallace Bay will also admit large ships at high water, and small craft enter the mouth of the river. Extensive mud flats are laid bare at low water, and there are about 500 acres of low marsh on the borders of the adjacent creeks. This port is advantageously situated for ship-building, the lumber trade, and the gulph fisheries. The river takes its rise from Folly lake, in Colchester; and, besides affording a passage for timber, it affords good sites for mills and sawing machinery.

The next harbour on this coast is Tatmagouche,* a pretty bay; but the water is shallow, and the river has a bar across its mouth that prevents large vessels entering: they are, nevertheless, safely loaded outside. This stream descends from the eastern extremity of the Cobequid mountains, and traverses an excellent tract of wild land. Tatmagouche Bay also receives River John, a fine stream, that has been latterly much improved as a site for ship-building. Carriboo harbour is also a convenient inlet for small vessels. This part of the coast is indented by a number of small creeks which run through tracts of low marsh.

The harbour of Pictou is sufficiently capacious, even at low water, when the tide is withdrawn from the extensive flats of the rivers. Both on the flood and

* From the Indian Taw-ma-gouche, signifying like a dam or sea wall.

ebb tide there is a rapid current through its narrow entrance. Near the time of high water the largest ships enter in perfect safety ; and the light-house standing by the side of the channel, is a sufficient guide at night. It is peculiarly advantageous that the coal field of the province is indented by this fine harbour, and its inflowing rivers, by which an immense export of coal is annually made to the United States. The rivers are the West, Middle, and East : the latter is navigable for small vessels six miles from its debouchement into the harbour, and the water is sufficiently deep at its mouth to allow the ships employed in the coal trade to lie afloat. Like the streams already noticed, these rivers, above their navigable points, are highly useful for rafting downwards the timber of the interior forests. They also afford numerous sites for mills, and, at their branching extremities, they irrigate the cleared uplands, and finally diminishing to small brooks, they drain the bays and lakes of the wilderness.

Still farther east is the harbour of Merigomish, which receives Sutherland's, French, and Barney rivers. A small island in the harbour is occupied by a party of the unfortunate Indians. Excepting malignant Cove, there is scarcely an indentation in the coast around Cape George to Antigonish. This is also a barred harbour, with a narrow entrance. Pommet harbour is of smaller dimensions ; but, besides other resources, the facilities for fishing at these places are very important.

The strait, or Gut of Canseau as it is commonly called, is the grand thoroughfare of all the Provincial and American trade to the Gulph of St. Lawrence. This remarkable channel is about a mile wide, up-

wards of 20 fathoms deep, and 15 miles in length. The current usually runs at the rate of four and a half miles an hour, and sometimes several days in one direction, according to the winds. The scenery is magnificent, and, during the summer season, it is enlivened by fleets of vessels of almost every description. This strait separates Cape-Breton from Nova-Scotia, to which it was no doubt attached at some distant former period: the geological evidences are such as indicate the breaking through of a narrow isthmus by the operation of powerful currents. It now opens into spacious harbours, abounding in fish of various kinds.

The narrowness of the passage renders it capable of being defended; and the progress of fleets may be arrested by batteries upon the shore. The number of American fishing vessels that pass through the strait, going to, and returning from, the Gulph, has been computed at 3,000 per annum: adding to these the number of coasters, fishermen, and timber-ships of the provinces, with those employed in the Pictou coal trade, the aggregate is immense.

It is proper to remark here, that all the ports and harbours northward of the Strait of Canseau—those of Northumberland Strait, Prince Edward's Island, and Bay Chaleur, are blocked up by ice during the winter season, when a vast expanse of the open sea is covered by the crystal element, and thick falls and drifts of snow. The sealing up of the harbours commences about the first of January, and the ice continues to the middle of April, and sometimes later. The mail is carried regularly from Cape Tormentine, at the entrance of Bay de Verte, across the ice to Prince Edward's Island, nine miles, in a boat built for the purpose. This boat is drawn by the couriers over the ice, or

pushed along the open spaces in the water, with great patience and endurance. The passage is indeed dangerous—fatal accidents have happened, and a number of persons have been severely frostbitten in crossing the channel. Bears and cariboo have been known to perform this half aquatic journey; and, in one instance, bruin was seen floating about on an ice-cake in the Gulph. Drove of seals, and, occasionally, walruses, frequent the fields of ice; and, when they happen to drift near the shore, they are attacked by the inhabitants. The Strait of Canseau is also choked up, and fixed or floating masses of ice prevent every kind of navigation. The principal southern ports of Nova-Scotia are free from such obstructions, even in the intensest cold. Their proximity to the Gulph Stream, and the waves of the Atlantic, prevent any great or very permanent collection of ice along their seaboard.

Chedabucto Bay, between Cape Canseau and Red Head, is 20 miles long, and 10 miles wide: it has but one shoal, and is navigable for the largest ships of the navy. At its inner extremity is the harbour of Guys-boro', or Milford Haven, which will admit vessels of 500 tons burthen. It is a beautiful sheet of water, half a mile wide, and three miles long, perfectly sheltered in all winds. A lake-like appendage extends still farther—the whole being navigable nearly ten miles from the bay. A tract of marshy intervale, nearly half a mile wide and two miles long, skirts the basin: from thence a fine valley narrows itself between the hills, as it advances into the interior. The whole scenery is bold, variegated, and peculiarly attractive. Salmon River, entering the head of the bay, is a small stream. Crow Harbour, on the south side, is

a semicircular cove, much frequented by the fishermen.

Canseau, situated at the south-easternmost part of the province, is an excellent harbour, open at all seasons of the year, except in the spring, when, like Chedabucto Bay, it is often filled with drift ice from the Gulph of St. Lawrence : yet it is seldom unnavigable more than two or three days at a time. It is formed by St. George's, Durell's, and other small islands, between which and the main land there is a deep channel, with good anchorage. This harbour, although not very capacious, is the resort of vessels during gales from the westward : as a fishing station it is unrivalled.

Canseau was the first part occupied by the English, French, and Spanish fishermen ; and from being near the key of the Gulph, it became a place of severe contest between the claimants of North America. The native Indians also held this station in high estimation, on account of its advantageous position and fisheries. The British Provincials established themselves upon the shores at an early period. In 1720 they were attacked by a band of Indian warriors who carried away and destroyed fish to the value of £20,000, and killed and made prisoners of a number of the fishermen. The Aborigines at this period had not been conquered, and they viewed the advances of the British as an aggression upon their rightful heritage—the domain of their forefathers. In 1723, they again made a descent upon Canseau, and captured 17 sail of fishing vessels. After a desperate engagement seven of these vessels were retaken, and fifteen captives liberated. 20 prisoners, who were doomed to torture, were afterwards ransomed from the savages

at Merleguish (Lunenburg).* The remains of forts are still to be seen on Green Island, and the adjacent shores; and the stone axes, spear and arrow heads, of the natives, are found in the soil, and on the sides of the harbour.

St. Andrew's, Whitehead, Raspberry, and Whale Islands, and Dover Harbour, all afford shelter.—The coast in this quarter is formed of white granite, which has been sculptured by the waves into the most fantastic forms; and, from being undermined, large shelving masses slope towards the sea like the roofs of houses.

In this brief description a more than passing notice may be taken of Whitehaven, as Sir William Colebrook, while he was governor of New Brunswick, was induced to recommend this harbour for the Atlantic terminus of the railway through Nova-Scotia and that province, to Quebec. In the reports of the Hon. Capt. Owen, marine surveyor to the Governor of New Brunswick, of Sept., 1846, Whitehaven is stated to be "not only the most conveniently situated, being the nearest approachable point of the continent of North America to England or Ireland (in lat. $45^{\circ} 10'$ N. long. $61^{\circ} 8'$ W.), but is a splendid and most commodious port, whose immediate entrance, and its harbour, are never incommoded by drift ice." Although "two outlying dangers, or small rocks, between the port and the open sea, and these only about half a mile from the shore," are laid down, it is stated that "the nautical facilities of attainment greatly exceed those of Halifax, or any other point on the coast" that he (Capt. Owen) had seen. Lieutenant Shortland, who accompanied Captain Owen in this survey, reports

* Halliburton's History of Nova-Scotia, vol. 1, p. 103.

that "when inside of the harbour care must be taken of several shoal rocky patches, which render navigation difficult to strangers." Again, the captain reports, "I have certified to your Excellency this one important fact, that at the nearest available point of North America to England or Ireland, there is a splendid port (Whitehaven), most conveniently placed, and endowed in every way, inviting to its use as the junction of the sea and rail communication between Great Britain and these colonies." It is unnecessary to quote further from these reports, which are in no small degree contradictory; and in reference to Whitehaven being free from ice, they are at variance with the actual knowledge of the inhabitants and masters of vessels who have frequented the coast during the last forty years. That the above harbour is superior, or in any degree equal to Halifax, no person who is practically acquainted with both, will for one moment admit. These reports would have been more respected in Nova-Scotia, if Capt. Owen, from whom they have emanated, had not been a shareholder, and actively engaged in the St. Andrew's and Quebec railway—which, however specious the attempts at concealment, is in opposition to the Halifax and Quebec line. It is to be regretted that Sir William Colebrooke should so far have allowed himself to be swayed from an object of great national importance, namely—the uniting of all these colonies by railway; and, in his visionary projects, have directed the attention of government away from the fortified terminus at Halifax to an uninhabited and barren inlet at Cape Canseau: a railroad from whence to Quebec would be as useless to almost the whole of Nova-Scotia, as if it commenced at Baffin's Bay; but we reserve far-

ther remarks upon this subject, until we come to treat of the proposed railways in general.

Torbay is pretty well sheltered, but a number of rocks and shoals at its entrance renders the navigation unsafe to any but good pilots. It receives several fine streams—the largest of which is Ingersol's river, springing from a series of small lakes to the north. New and Geddis harbours are small inlets.

Country harbour is a deep indentation, navigable for ships of any burthen, 10 miles. It receives a river, and several small streams, that flow in from the lakes in the wilderness of the north. It was settled by the disbanded soldiers of the North Carolina regiment, in 1783; but, from the rocky and sterile character of the soil, it has not been much improved.

The next river is St. Mary's, a romantic stream, that stretches away towards Stewiacke; and its eastern branches drain a number of lakes in the uninhabited districts remote from the coast. It opens into a spacious and deep bay, into which the largest ships may enter, and ride in perfect safety. Fisherman's harbour is also a convenient haven for coasters. The inlets and islands between this place and Halifax are numerous—of them Liscomb, Beaver, Sheet, Ship, Jeddore, Musquodoboit, Chezzecook, and Cole harbours, are the most important; and, with other indentations, they render the navigation of the coast peculiarly favorable, and offer facilities for fishing not surpassed in any part of the world. From its maritime resources alone, this coast is admirably fitted for the support of a numerous population, and the supply of immense exports.

The harbour of Halifax (in Lat. 44° 40' N. Long. 63° 60' W.) is universally admitted to be the best in

America. No sooner was it discovered, than the British and French fleets made it their point of rendezvous, in the early struggles of the two powers to occupy and hold the country. It was also a favorite resort of the Micmac Indians, who, for many years, continued their barbarous warfare against the first colonists who settled upon its shores. The lakes of Dartmouth, and the Shubenacadie, afforded them an easy communication with the Bay of Fundy. The fisheries and hunting grounds in this quarter were also highly prized. The navies of all Europe might enter this harbour, which is accessible at all seasons of the year. It opens into the Atlantic from the north, and, after extending fifteen miles, terminates in a beautiful land-locked basin, where whole fleets may ride at good anchorage. Its wide entrance between Sambro Light and Devil's Island, is almost free from danger. MacNab's Island, on the eastern border, is three miles long: between it and the main land is the Eastern passage, frequented by the smaller vessels. The entrance to this port is well lighted, and buoys are fixed upon all the shoals. A fine deep channel stretches towards Margaret's Bay, called the North-west Arm, which renders the site of the City of Halifax a peninsula.

From the numerous advantages of this port, it has been wisely selected for the capital of the province, which stands on its western side, surrounded by fortifications, and defended by George's Island, a bold elevation in the middle of the harbour. Halifax is the first safe port that can be reached on the continent of North America at all seasons of the year, after leaving Great Britain. It has therefore been selected for the first landing for the steamers from Europe, and must

be the terminus of the great railway of the provinces, which, with a railway to Windsor, would render Halifax one of the greatest commercial cities in America.

Sackville river runs from small lakes and swamps, situate in the direction of Windsor; and having washed a rocky bed, is finally poured into Bedford Basin, at its northern extremity. Nine mile river is smaller than the Sackville, and both are employed in propelling manufacturing machinery.

Sambro harbour is a small bay, with a narrow mouth; yet it has saved many vessels from shipwreck after they had fallen to leeward of Halifax in gales from the south-east. Proceeding westward, the Atlantic makes a deep notch into the central part of the province, and sends out Margaret's and Mahone Bays. The former of these is of itself an immense haven; and besides Pennant, Prospect, Dover, and Indian harbours, there are other inlets that admit vessels of every tonnage. This bay receives a number of small streams affording mill sites, and its waters abound in fish.

Mahone Bay, justly celebrated for its beautiful scenery, is upwards of twelve miles in diameter. The Tamcook Islands, at its entrance, break off the sea to the south-east. The harbour of Chester is also protected. The whole shore abounds in river mouths and inlets of deep water. The islands thicken as the maritime traveller advances, and assume infinite variety in shape and feature. A few are thinly inhabited—others are covered with evergreens. The whole form a labyrinth, whose attractions can scarcely be imagined or described. The principal streams are Gold and Mushamush rivers. The former springs from a small lake, and, on account of its fine salmon,

has long been celebrated by the disciples of Isaac Walton.

The harbour of Lunenburg* is separated from Mahone Bay by a narrow peninsula, and is accessible for ships of the largest class. Its borders were settled by Germans and Swiss in 1751. The fertility of the soil, the fisheries, facilities for commerce, having been improved by a sober and industrious population, have made the wilderness in this quarter "to blossom as the rose." The town of Lunenburg stands upon the north-east bank of the bay. At its commencement it was much exposed to the attacks of the Indians, and remnants of the block-houses and palisades still remain, that were erected by the first immigrants for its defence.

LeHave, six miles westward of Lunenburg, was taken possession of by the French in 1613. In 1634 LaTour obtained an extensive grant of land along its banks; and his fort, at the entrance of the bay, still to be seen, was the theatre of many tragical events. At the entrance of this admirable harbour there are a number of islands, affording the necessary shelter against the winds and waves of the boisterous Atlantic. Some of these are mere inlets, or naked rocks. Some are tufted with verdant spots, while the larger and more fertile of the group, are shaded by forest trees and scrubbery. The noble and most romantic river enters the outer harbour, through a narrow passage and is navigable to the distance of fifteen miles: a bar at its mouth has 21 feet water at full sea. Three miles above, at the ferry, the river is three quarters of a mile wide, and from three to six fathoms deep: Eighteen miles from its debouchement, it passes over

* Merleguiah of the Indians.

a fall of 20 feet. Six miles farther up it has another cataract of surpassing beauty. This fine stream takes its rise at the Kempt lake; and its extreme sources touch the head of the Gaspereau, emptying in the opposite direction into Minas Basin. The main trunk of the river, and its lakes, were the route of the Indians in former times, when they transported their light bark canoes up the rapids, and across the portages, to the Gaspereau lakes at Horton, and thence to the Bay of Fundy. The river is now occupied by numerous saw mills, and therefore its salmon fishery has been nearly destroyed. The whole scenery is of the most fascinating character. The uncultivated intervals are covered with scrubbery; and, on the hills, the tall trunk of the pine, peering far above all its competitors, waves gracefully in the air. The lakes also have their little islets, shaded by the maple, the beach, or the oak. Nature, in all its wild luxuriance, still holds uncontrolled dominion; and the bear and moose wander through the forests fearless of the hunter's skill.

The Indians have a curious legend, that when the whites first landed upon their grounds, the bears and moose held a general parliament at the (Ponhook), or outlet of the upper lake, about fifty miles from the seaboard, and entered into a treaty. They both declared war against the "pale faces." The moose were to destroy all the corn fields, and the bears the cattle and sheep of the "new comers;" but no person was to be eaten by them, unless he carried a gun, of which they entertained the greatest fears. The place where the conference was held is still guarded by two bears and two moose, which are invulnerable; and since the treaty, no bear has been known to kill

a moose, however young and defenceless. One of the Indians declared to the writer, that it would have been better for his people if they had attended the convention, and entered into the alliance; for the white men had made laws to protect the moose, ducks, and partridges, but had done nothing for the preservation of his tribe.

Petite Riviere is a small stream, still further westward. Its mouth is somewhat sheltered by Cape LeHave and Indian Island. Port Medway, another excellent harbour, opens directly into the sea. Ships of the largest class enter this port, and are laden with timber, or the produce of the fisheries. Its river, which communicates with Lake Rosignol, has been much employed to raft the timber of the back country downwards to the saw-mills, which are in constant employment near its mouth.

Liverpool was called by the Indians Rosignol, after a captain of that name, whose property was very unceremoniously seized at this place by De Monts in 1504. It is about 80 miles west of Halifax, and 14 from Cape LeHave. A fine bay is formed inside of Coffin's Island, where there is good anchorage, and ships of any burthen may ascend to the town, situated at the junction of the river with the bay. The current produced by the stream prevents this harbour from freezing over during the winter: its commerce, therefore, is not interrupted: and the facilities it affords for fishing and the lumber trade, have rendered it a place of importance. There is a lighthouse on Coffin's Island, and another at the battery adjoining the town.

The Liverpool river, with its numerous lakes, affords extensive water communication with the interior

country, notwithstanding the stream a short distance above its mouth is not navigable for vessels. It sends down from its lakes, and over its rapids, an immense supply of timber annually. A dam has been thrown across the river at Mill-town, and mills with every variety of sawing machinery, are kept in constant operation. But by these works the salmon fishery has been almost destroyed. About 15 miles above Mill-town, the river widens into Ponhook* lake, and enters the great lake 10 miles further north. Lake Rosignol is nearly 20 miles long, and, upon an average, 4 miles wide. This beautiful inland basin is studded with islands of various forms and dimensions, from the naked or lichen covered rock, to the fertile track covered with soil, capable of cultivation, and overshadowed by forest trees. The shores are deeply notched by creeks and coves, that alternate with sharp rocky headlands, against which the waves dash with great violence. As the canoe glides along between the narrow islands, the apertures disclose glimpses of the sky and distant high lands, while the evanescent view is changed with a rapidity that baffles the strongest efforts of subsequent recollection. In calm weather the unruffled surface of the water reflects like a mirror the form of the islands, rocks and trees, which are inverted, and with base to base, present the traveller with a double view of the wild landscape. The water is deep, and the surrounding country is a wilderness, visited only by the lumbermen and the Indian hunter. The river extends from the lake north-west, and a number of small basins send in their surplus waters through a channel near its entrance. About 8 miles further north the stream enters into

* Outlet in the Indian dialect.

Fairy lake, called by the Indians, who have a settlement upon its eastern border, Kedgumcoogic. This is also a beautiful sheet of water, studded with islands, and there are some excellent lands upon its borders. The whole interior country in this quarter is dotted with the lakes emptying into Rosignol, or Port Medway rivers. Combined with the undulating surface, these clear and gravelly bordered reservoirs render the scenery very attractive; but as cultivation has not yet penetrated these inland recesses, a deep gloom and silence prevails over immense tracts. The Liverpool river continues its northerly course until it reaches the head of Allen's river in the county of Annapolis, which it touches at its extreme sources about 70 miles from its mouth, and 12 miles from Annapolis Basin. These rivers and lakes have always afforded the Aborigines an easy communication across the province. The Indians traverse the whole distance in their canoes, excepting a few portages made to avoid rapids, some of which are not free from danger. There are several beautiful falls upon the Liverpool and Medway rivers, which offer immense power for carrying machinery. These streams and the LeHave, with the numerous lakes associated with them, have already opened the forests of the central portion of this part of the province. They are natural canals, and the keys that unlock the physical wealth of the country. By having their obstructions removed, they will become hereafter, by the labour of a greater population, important auxiliaries to the resources of the western district. To these resources we will advert hereafter.

Port Mouton is a fine bay, with islands. Its lands were settled in 1783, by soldiers of the British Legion; but from the rocky character of the soil, and a de-

structive fire that consumed their village, they abandoned their enterprize. The lands have since been taken up by other persons, who are chiefly engaged in the fisheries. Port Joli has very shallow water.— There is good anchorage at the entrance of Port Herbert; but the head of the bay is shoaled off by a collection of marine alluvium. Sable River is a barred harbour, admitting the tide about six miles. The stream reaches a great distance into the uninhabited country, northward. Besides these, there are Ragged Island harbour, and other coves, frequented by the fishermen.

Jordan River is navigable 10 miles. This stream runs over a very rocky bed, and its sources approach the tributaries of lake Rosignal. We now arrive at Shelburne harbour, which, like Halifax, is reputed to be one of the best havens in America. McNut's island is situated at the entrance of the wide-mouthed bay, and is the site of a lofty light-house. The main entrance, on the east side of the island, is free from all danger. The bay, three miles long, has deep water and good holding ground. Roseway river, a considerable stream, is employed near its exit to propel saws and grist mills.

Shelburne was almost unoccupied till the termination of the last American revolutionary war, when upwards of 400 families associated themselves at New York, and finally arrived at Port Roseway on the 4th May, 1783. They immediately laid out a handsome town, and the population was soon increased to 12,000; but the soil, which is very stony, proved ungrateful, and the place was afterwards almost entirely deserted. Since that period it has slowly revived, under the operations of the fisheries and timber trade. The

rocks also have been cleared away, and some fine fields have been brought into cultivation.

A series of small lakes in the interior give rise to a river called the Clyde, from its supposed resemblance to the Clyde of Scotland. It is a beautiful stream, winding its way through narrow intervalles, that form an oasis in the desert, and in deep channels worn out of the granite and slate. It gives passage to the timber of its banks, and has a harbour at its mouth.—The shores in this quarter are but thinly populated. This river and its harbour are separated by a long narrow peninsula from Port LaTour, the site of a disastrous settlement made by the French in 1626. The relics of their fortifications are still visible.

The next harbour of much importance is Barrington. This is a fine bay, sheltered by Cape Sable island, which occupies its mouth, leaving a channel on each side. The bay and adjacent shores abound in fish. The inhabitants, whose forefathers were from New England, are chiefly engaged in maritime pursuits. Saw mills have been erected upon the river and other streams; and much of the soil, after the rocky boulders have been removed from it, is found to be strong and productive.

The principal harbours between Cape Sable and Yarmouth, are Pubnico, Abuptic, Tusket River, and Jebogue. The whole of this, the south-west coast of the province, is low, and abounds in coves and creeks, skirted by low marshes. It is defended by islands of every form: in Argyle bay alone their number is said to be upwards of 300. These islands, with the lakes, creeks, and marshes, of the main land, present an infinity of form and beauty. Anchorage is offered for

vessels of all sizes ; and, besides excellent fisheries, every convenience is offered for ship-building.

Tusket river, opening into the above bay is navigable eight miles. Above the tide it connects a chain of lakes, which may be traversed in boats to the distance of 30 miles. The whole interior of this part of the province is interspersed with lakes from one to ten miles in length. The peculiar features and beauty of the Tusket made it the resort of the Indians, who, with their light barks, crossed thence to lake Rosignol and to the Sissiboo, emptying into St. Mary's bay. There is a tradition that the aborigines formerly assembled here to offer sacrifice to the Great Spirit, and the traces of their hieroglyphics still remaining upon certain rocks are such as corroborate that opinion : but it was to these interior retreats and fastnesses that the Indians and frequently the French neutrals, made their escape, when they were defeated upon the sea-board, thus the sites of old encampments, known by the presence of apple trees and Indian relics still found in remote situations.

When the Acadians were sentenced to transportation in 1775, a number of them fled to Raynard's falls, on the Tusket river. But even in this secluded spot, they were not secure from pursuers. An armed boat was despatched up the river and its lakes. At a very narrow passage its crew was surprised by the fugitives, who having concealed themselves in the bushes at a narrow strait, they fired and killed or wounded the whole of their enemies. This unpolitic and savage act, was duly retaliated and such of the persons who were engaged in it that escaped death, were exiled, or compelled by necessity to associate themselves with

the Indians.* Jebogue river and harbour are navigable six miles. Their opening into the sea is narrow and not to be passed at low water. The principal harbour of Yarmouth, is still called by the fishermen Cape Forchu. It is capacious and well sheltered, and navigable for large ships to the thriving town stretched along its south-eastern border. Small craft ascend still higher, and might be locked upwards into the adjacent lakes. The Jebogue, Chegoggin, Beaver, Salmon, and Tusket rivers with numerous lakes, afford abundant means of internal water communication, and the whole face of the country is diversified by the most fascinating landscapes, and the elements of successful industry. The timber of the interior, the fisheries, and proximity of the port to the United States, have rendered it highly important, and the surrounding country is improving perhaps more rapidly than any other part of the province.

Northward of Yarmouth there are Jegoggin harbour, and a few small coves: but these are chiefly advantageous as fishing stations. The whole southern shore of St. Mary's Bay, a wide and deep inlet is without a harbour, excepting the fine inlet and basin of Sissiboo. The trappean rocks of the North Mountains of King's and Annapolis, are extended beyond the narrow inlet of Digby to Brier Island, where they terminate, having formed the north side of St. Mary's. This long and narrow peninsula is cut through at the Grand and Petit passages, two convenient harbours for vessels bound up the Bay of Fundy.

In this brief account, the value and importance of the harbours and their rivers in reference to the commerce and fisheries of the country are most obvious.

Many of the lakes and their connecting rivulets extend water facilities far inland, and by having their natural obstacles removed, or by the application of the art of the engineer, they may be improved much beyond those points where they now cease to be useful. The power they offer to carry machinery is almost unlimited, and besides the benefits of irrigation, they impart unsurpassable beauty to the country scenery, especially to inland tracts, where the gloomy wilderness is cheered by the lake, the rivulet, and the dashing waterfall.

The advantages offered to the clearing out of these water channels have scarcely yet struck the minds of the scanty population. Many of them are now choked by fallen timber, and where the windfalls have been swept away by freshets, "timber jams" (dams) have been formed that cause the overflow of valuable intervals. Some fine tracts in the wilderness have been inundated by the dams of the industrious beaver, long since exterminated. To compensate this gaining of the water upon the land, the operations of nature have burst the barriers of lakes, whose borders are now seen on dry terraced alluviums, covered by alders and tall indigenous grasses.

The inhabitants of the province in general have little knowledge of the remote and uninhabited inland tracts. The information brought in by the lumbermen and Indian hunters, who have no desire that the backlands shall be settled, is very imperfect, and no general survey has ever been authorised by the legislature. The result has been that fine tracts have been condemned, and opinions have gone abroad unfavourable to the agricultural character of the whole country. Millions of acres of land that have never

been explored nor surveyed, have been gravely pronounced to be unworthy of the immigrant's notice, and by a kind of Provincial cupidity the industrious stranger has been intimidated against landing upon shores that abound in the common bounties of Providence. At the same time lands exactly similar in their geological and agricultural characters, in the New England States, have been redeemed to the plough and the sickle. Similar "water privileges" have been applied to extensive manufactures, and a dense and thriving population has sprung up along the whole American sea-board, where the fisheries are as nothing compared with those of Nova-Scotia.

CHAPTER III.

Marshes—Alluviums—Wild Lands—Forests—Surveys—Quality of
Lands, Timber, &c.

I HAVE already adverted to marshes of the province. These valuable lands differ in their character and fertility, according to their situations. They have been produced by the operations of the sea and tides. The fine sedimentary matter abraded from the rocks by the waves and meteoric agents, is carried into the estuaries and up the rivers, where, at high water, or slack tide, a part of it subsides, and finally covers the whole of the overflown surface with mud. By the heat of the sun, at low water and during the low tides, this sediment is dried, and converted into solid earth, possessing extremely fertile properties. All the shallow basins and river-mouths of Minas and Cumberland Bays, have been filled with these alluviums of the sea, excepting only the narrow channels required to vent the water of the descending stream. The increase of these deposits is truly surprising. In the great Tantamarre Marsh, cordwood, French relics, trees, bridges, and fragments of wrecked vessels, have been found in ditching, twelve feet below the surface, and more than two miles from the present boundary of the sea. Similar objects are also found deeply imbedded in the marshes of Hants and Kings Counties. Tracts of alluvium are sometimes seen resting upon groups of fal-

len trees, which have been buried by the transporting power of currents. As Egypt is the gift of the Nile so are these marshes the gift of the tides. An immense tract has been formed between Minudie and Sackville. An old channel of the Cornwallis river has been filled up, and the middle ground in the Canard has been united to the shore. Four square miles of solid land have been produced by the eddy of Starr's Point. This new tract has been made during the last fifty years, and has given rise to contentions in regard to the right of proprietorship. Other rivers afford evidences of the advances of the land, and Minas Basin itself is gradually filling up. Shingle beaches and mud flats are rising at many different points, and impediments are offered to navigation that were unknown a century ago.

The marshes thus produced from the red marly sandstones of Minas Basin are more productive than those of Cumberland, where the rocks of the shores are more silicious, and consequently less fertile.—Thousands of acres have been rescued from the sea by embankments or dikes. They afford abundant crops of wheat, oats, and grass, and never require any manure. Such alluviums are also excellent stimulants for dry and sandy soil, and their use is growing more general.

The marshes of the North-Eastern Counties, or such as border upon the Straits of Northumberland, are less extensive, and from the small rise of the tides they are imperfectly drained at low water. They seldom yield any of the cultivated grasses. Those of the Atlantic coast are meagre in quality and but little improved. Some of the marshes of Yarmouth might be redeemed by diking and draining. At present they

are in their natural state, and yield but small crops of wild hay. From the abundance of decomposed marine plants contained in them, they are very valuable for composts, yet, the inhabitants have scarcely begun to employ them as manure.

The extent of those marshes upon all the principal rivers is a peculiar feature of Nova-Scotia: they supply nearly two thirds of all the hay consumed in the country, besides crops of wheat and oats. The diked and marsh lands may be justly reckoned among the best agricultural resources of the province, but such is their general state at present, that they do not yield one half the amount of crop they would return by the application of labour and better management.

Another class of alluviums occurs on the banks of almost all the streams, being known as "intervales." They are situated above the flow of the tides, and have been produced chiefly by the freshets of spring and autumn, by which they are overflowed. Another variety, called high intervale, appears in terraced borders along the flanks of the streams. These alluvial soils are the richest in the province. Their fertility, however, has not invited general improvement, and fine tracts of them are seen in every quarter overgrown by alders, and rank weeds. By retaining their moisture, such lands afford more certain crops of grass than the uplands, especially in dry seasons, and by supplying hay, they have fitted the country for the extensive rearing of cattle and sheep. In hay-time many farmers are seen clipping around the clumps of alder bushes, to gather the grass where nature has left a spot unshaded. The labour of bringing such tracts into open meadows is their dread, and excellent covers for snipe and woodcock are seen at their doors. Ditch-

ing, levelling, and clearing up, are quite in disrepute. Many pride themselves in being able to "keep along" without them. The idea of cultivating tracts that annually receive the fertilising matter of the adjacent hills, is styled theory. To allow them to remain in a worthless state, is practice. If the first year's crop will not pay all cost, an axe in the garret is considered worth two in the swamp. Many are averse to trying experiments their fathers never meddled with. Hard labour is sometime supposed to denote poverty, and the reclamer of an alluvial meadow must expect to be called a mudlark, or a bog-trotter. A fine stalwart farmer told me one day, that he should make no improvements until Responsible Government was brought into operation. His views were evidently those of the laundress in England, who refused to wash her master's linen, after she was informed that the Reform Bill had passed into a law.

WILD LANDS, &C.

Not more than one-tenth part of the whole area of Nova-Scotia has ever been cleared of its timber: the remaining surface is covered by the original forests, peat bogs, and lakes. It is only along some of the fertile banks of the bays and rivers, that cultivation has begun to appear. From the advantages offered for the transportation of agricultural produce, the lands on the sides of the main post roads have been taken up, although they are not generally cultivated. These roads pass through some of the most populous villages and settlements, from which they frequently emerge into the wilderness, or the stumpy clearings of new farms.— From the principal roads, others called bye-roads, diverge in different directions, to the back settlements,

varying in their qualities from the smooth turnpike to the mere log-road and rabbit path. Excepting Musquodoboit, Stewiacke, and Caledonia, few of these settlements are extensive.

Extending from Yarmouth at the west, and running through the middle portion of the province, to the Gut of Canseau, and nearly to the shore of Northumberland Strait; at the east, there is a tract of wilderness land indented at a few intervals by roads, uniting the northern and southern settlements. This uninhabited region contains not less than 3,500,000 acres, and is only here and there notched by settlements, or clearings. It is dotted over by lakes, and intersected in every direction by streams of water. There are no elevations of very alpine character. The surface is undulated, swelling into hills of some altitude, or declining into vallies that slope away towards the courses of the rivers, or basins of the lakes. In the most rocky and elevated districts, narrow gorges and defiles are sometimes seen, and where the water falls by successive steps, affording in their channels admirable sites for mills and machinery. This description of country is chiefly confined to a granitic and central ridge, from which the rivers fall in opposite directions towards the Bay of Fundy and the Atlantic Ocean. The amount of surface too steep for actual cultivation, bears but a small proportion to the level land, gentle acclivities, or more rapid ascents, that flank the hills. Upon the highest elevations there are often table lands, and even in the remotest situations, patches of intervale accompany the brooks. The scenery of this wilderness can scarcely be anticipated, after cultivation shall have introduced its cheering labours into the forests and pruned the borders of

lakes, now overhung with drooping evergreens.— All that the moose hunter can now see from the summits of the mountains, are sky, trees, and lakes, and occasionally a smooth bog, where the cariboo gambol without danger from deer-stalkers.

The whole of this area has been unsparingly condemned as being rocky, barren, and worthless—unfit for every thing but the abode of untamed animals, or forsooth the unfortunate Indians, who have been driven away from the more fertile grounds of the lower country. When compared with the mellow alluviums of the northern counties, this division of the province certainly holds a very inferior rank. The naked rocks often protrude from the earth, and scarcely afford a foothold for the stunted spruces and lichens that cling to them for support. The rocky character of the land is determined by the presence of granitic boulders, or loose stones, scattered over the whole surface. Some tracts are completely covered by them, and in masses that defy removal. At other places they have been less bountifully distributed, and are comparatively small in their dimensions. With such tracts there are others covered by a deep, strong soil, admitting of easy tillage. The character of the interior country has been decided, by the actual state of the lands along the southern coast, and not by examination. Where one was found to be unfavorable, the other was pronounced to be worse, and thus a general opinion has sprung up, that were it reversed, would be nearly correct.

The lands of the central portion of this part of Nova-Scotia are less rocky, and contain a greater tillable surface than those of the southern shores. In proof of this, I have only to refer to the fine settlements in

the neighbourhood of New Caledonia, on the northern side of the county of Queens, and forty miles from the coast.

In its principal features, the territory before us is similar to the Atlantic side of New Brunswick, and the coasts of all the American States, as far west as the western part of New York, where numerous towns and villages have sprung up, the rocks have been leveled and removed, and much of the surface rendered arable. In Nova-Scotia, this boulder district has been the terror of the ignorant settler—its reputed sterility has turned away many respectable immigrants to seek their fortunes elsewhere. Many of the hardy sons of the country have not attempted the tillage of fine tracts that still remain ungranted. The wide field open to their industry is neglected, the progress of agriculture upon its borders has been scarcely perceptible within the last twenty years. This state of things may in a great degree be ascribed to the lack of careful explorations and surveys, hitherto not authorized by the legislature. In Canada and the United States, careful surveys and examinations always produce occupation, and prove a stimulus to improvement.

Of the whole tract under consideration, at least one quarter is fit for immediate cultivation, and by a moderately numerous population, two-thirds of its surface may be redeemed to tillage. The remaining part is little more than would be required for pasture, and the supply of timber and fuel at a future day.

There is another very extensive wild district reaching from Cape Chignecto and the border of Cumberland Bay, along the southern side of Cumberland, and northern side of Colchester, embracing the Cobequid

Mountains to the Strait of Northumberland. It contains upwards of 1,000,000 of acres. This belt of wilderness is thinly settled along its southern side at Parrsboro'; and it forms the high lands north of the populous villages of Economy, Londonderry, Onslow, and Truro. The lands are more elevated, contain fewer lakes, and produce a more lofty growth of timber, than the region before described. Although certain portions of it are rocky, boulders are less numerous, and the tillable surface is greater. It is pierced by numerous rivers: two of which, the Five Island and Economy, come tumbling from the Cobequid hills in beautiful cataracts. There are many tracts of superior soil, and three quarters of the whole area will yield ample returns to the labor of the backwoodsman. The lands along both bases of the Cobequid range are rich, and so far as they have been cultivated, they promise more than ordinary crops of grain.

Besides the uninhabited districts just referred to, there is in almost every county more or less ungranted wilderness land, and tracts that have been alienated from the crown. The whole quantity of ungranted land in the province is about 3,500,000 acres. The wild lands granted, but remaining unoccupied, and liable to be escheated, may be estimated at 3,000,000 acres. Much of this quantity has been purchased from the government merely for its timber. Upon an average, such lands may be purchased at two shillings currency per acre. At a moderate calculation there are 4,000,000 of acres, including both the granted and the ungranted land in the province, that might be immediately obtained, and successfully cultivated.—Whenever that quantity is occupied, the introduction of roads, and other internal improvements, will offer

1,500,000 acres more for settlement. We have then 5,500,000 acres open to immigrants, of whom 55,000 families may be supplied. This population must be considered apart from that which would naturally be engaged in the trades and manufacture, and also the inhabitants of towns and villages, the offspring of successful settlement. Many of the native population remove from the province to the United States as soon as they grow up, and therefore, at the present rate of improvement, many centuries must elapse before the wild lands of Nova-Scotia will be occupied by the native settler.

Between the parallel belts of wilderness, the valleys and the river mouths contain the best agricultural settlements and finest villages of the province. They are almost surrounded by forests of primitive timber, and so limited is the surface, rendered arable by tillage, and so imperfect is the disclosure of its resources, that the country absolutely requires to be discovered again.

It is scarcely necessary to advert to the value of the wilderness lands as one of the industrial resources of Nova-Scotia. It is manifest that they form the basis of all central improvement, as well as the foundation of enduring wealth and contentment. They are indeed reserves too vast for the present population, who would reap incalculable benefits by the improvements their cultivation could not fail to effect. The opinion that those lands and their resources, should be concealed from respectable immigrants, or reserved for the descendants of the old loyalists, is far too selfish and narrow. Without more liberal views, and the introduction of public works of utility, those lands will remain impregnable to all redeeming operations.

A most obvious impediment to the improvement of the country, is the lack of, or rather the entire absence of, general surveys and correct reports of the waste lands. Not without foundation is the opinion held by many intelligent persons, that the marine survey of the province recently discontinued by the Admiralty is very imperfect. The map of the Provinces which has been published at the public expense, is incorrect and incomplete. Extraordinary deviations have been made in running the county and township lines. Boundary disputes frequently arise, and lands described as being in one county are frequently found in another. The sites of rivers, lakes, mountains, and tracts of wilderness lands, are frequently determined by the opinions of lumbermen and moose-hunters. "The eye and clever guess work" have been deemed sufficiently accurate in a new country where "the land is not worth quarreling about." No systematic nor scientific surveys have ever been made, no meridional lines have been established. The actual situation of important geographical stations have never been ascertained. Distances are computed by the time required to travel over them. The blaze of a sable hunter has been the approved site for a road.—The geography of the country seems to be best known to the Indians, who determine locality and distance by the time required to drag a quarter of moose-meat from the forest, on a toboggon, or the soreness of their feet from the thong of the snow shoe. Nor are the observations of the cutters of broomsticks and the drivers of runaway pigs more satisfactory. Parcels of land have been lost, and cannot be found, others are reported to have changed their quarters, and the whole area of the waste lands are involved in a labyrinth

that nothing but correct surveys can ever unravel. Titles to land are insecure. Many individuals do not know whether their habitations belong to themselves, their neighbours, or the Crown.

If the back-woods adventurer discover a good plot of ground, a grove of valuable timber, or a mill site, he applies to the Crown Lands office, gets a survey of the isolated tract, pays the upset price, and obtains his grant. In such surveys no regard is paid to the physical features of the country : its rivers, lakes, future roads, or improvements of any kind. The lots are laid out of all sizes and at all angles, according to the fancy of the applicant. It would perhaps be wrong to charge the surveyors generally with incompetency ; but many of their instruments are imperfect, the variations of the magnetic needle are seldom attended to, and few have any meridian, or correct starting point to guide them in their calculations. If a correct map of the province were now made, the borders of all the granted lands would exhibit curious indentations. Between their notched and jagged margins, there would be the isolated grants, great and small, not like the squares on a chessboard or the spots on the ten of diamonds, but the promiscuous clippings of paper sometimes made to amuse children.

Every effort has been made by the surveyor-general, to prevent this disordered condition of the surveys, and no care is wanting in his office to obtain correct plans ; but the legislature have never placed the means at his disposal to enable him to remedy these evils, which will be perpetuated, until a general survey is made of all the ungranted lands. The united testimony of all the witnesses examined in Lord Durham's enquiry was, that great evils existed and would con-

tinue, from the total want of accurate surveys in Canada. If such be the fact in that colony, where there is a great crown land revenue, and a strong body of able surveyors, and also in New Brunswick, where the timber duties alone are ample for the survey of the waste lands, what must be the condition of Nova-Scotia, where the whole amount of land sales is little more than will maintain the establishment of an office, consisting of a principal and two clerks.

If the withholding of the necessary means to complete a survey of the province and its wild lands, has been intended to prevent immigration and internal improvement, it has been effectual in its operations. If otherwise, and a public boon has been denied with a view to economy, it has defeated its own object, by preventing the introduction of foreign capital and labor, it has driven the industrious settler from the province, and exiled the sons and daughters of the richest portion of the empire—the brightest gem in the imperial crown. Such have been the surveys in other British colonies and even of islands in the Pacific Ocean, that persons desirous to emigrate there may ascertain the position, productions, and qualities of the soil, in England, before they leave her shores. This most necessary information cannot be obtained in Nova-Scotia except by actual inspection, and an expensive survey of the land by the intended purchaser.

At the Colonial Land and Emigration office in London, the want of proper surveys in Nova Scotia is considered the chief discouragement to settlers with capital to resort to the colony. It not only checks the influx of rural labor: but, also restrains the enterprise of the Nova-Scotians themselves, and arrests the progress of public melioration. An exception must here be

taken to two classes of persons who are benefitted by inaccurate and imperfect surveys: they are the barristers and the squatters of the province. By the litigations they produce, they afford the former lucrative employment, and fill the courts with law suits, which will increase in number as the back lands are rendered more valuable. From the uncertainty of the positions of lines and boundaries, the squatter may fix his abode where it pleases him, and the whole of the timber on the lands of the interior is at the disposal of trespassers, who view all the wood upon ungranted lands as their own. To hope that the crown lands department can bring any revenue into the public chest under the present system, is to hope that the pendulum of a clock will vibrate without first being put in motion. The people of the United States have long since discovered the value of careful surveys and explorations.— Their most remote lands are laid out into counties, townships, tiers, and lots, and checkered like diceboards. Their plans are accompanied by descriptions of the discovered resources. The forest pioneer has only to advance till he finds the number of his grant, when, to employ his own phrase, his journey is used up.

To the enquiry from what source can the expense of such surveys be obtained? The reply that presents itself is, from the lands themselves. The evils resulting from large grants, and those made to persons who neither occupy or cultivate them, are universally admitted. Extensive blocks of land are allowed by their proprietors to remain in a wilderness state, until roads have been opened to them, and they become valuable by the labor of poor settlers who approach them.— The great amount of private land kept in a wild state

has prevented the settlement of the interior districts, and shut up the forest from useful enterprise. A tax imposed upon all lands not improved, would be most salutary. In every case where such a tax should not be paid, the land should be sold, or escheated. Two shillings and six pence per annum for every hundred acres would not be an inconvenient tax for proprietors generally. Speculators in such property would be stimulated to improve or offer one half of their lands for the redemption of the rest. One hundred acres may be exempt to every settler who resides upon and improves his lot. This tax would only be equivalent to the quit rents, which have been commuted by the government to the pioneer, for the payment of an annual sum. A tax upon wild lands has been most advantageously levied upon the improved lands in Prince Edward's Island. Besides yielding a revenue, the proprietors have begun to exert themselves to find tenants; leases are granted upon more favorable terms, and the result is the rapid advance of agriculture. From the funds thus obtained, a noble building, devoted to public uses, has been erected, and important works commenced. There is, therefore, no uncertainty in the practical working of a scheme that operates beneficially in a colony where the lands have all been granted. The income derived from this tax in Nova-Scotia, should first be applied to completing a perfect survey of the wild lands, with a brief description of their resources. It may then be devoted to the construction of roads to new settlements, and other objects necessary to encourage the young men of the province, or emigrants, to open the forests. In this way it would in reality be returned to those who paid it.

Under the present system the unauthorised occupation of land is scarcely considered an offence. Squatters, as they are called, are numerous in every quarter. It must be admitted that this class of persons is useful in a new country, they are the pioneers of the wilderness—the advanced guard of cultivation. But the evils that will ultimately fall upon them for their unlawful seizure of lands, far exceed the benefits obtained by their endurance and fortitude. Almost all the pauper immigrants that arrive in the province become squatters—to these are added the reckless and unfortunate of the native population. Of 1500 persons that arrived at Cape Breton in 1842, the greater number immediately took possession of private lands. The average number of such immigrants who arrive in Nova-Scotia, is perhaps, 1000 per annum. It is true that squatters sometimes purchase the lands upon which they have fixed their habitations, yet such instances bear but a small proportion to the number who live on without ever seeking titles to their purloined fields. Sometimes the rightful owner of the soil waits until the squatter has rendered his land valuable, when he ejects him, and in poverty and distress he commences his labor elsewhere, perhaps again to be driven away.—With a pig, a cow, and a few cakes of maple sugar, some are ready to migrate at an hour's notice. The government, and many humane individuals have been lenient towards this peculiar class of people. Were they to enforce their rights, hundreds of families, after having toiled hard for many years, would be cast upon the world in a state of abject misery. The humanity of the authorities and respectable grantees, has in some degree been the cause of an offence which they are now unable to remedy. But there is a remedy in the

hands of the legislature—a remedy that will render the squatter moral and happy, and at the same time extend the agriculture, and advance the interest of the country. In the first place, let a general survey be made, with some regard to the clearings of the above persons, who must be duly notified that they shall either pay a fixed price for their lands, become tenants, or remove within certain fixed periods. By such a regulation, nine-tenths of all the unauthorised occupants in the province, in ten years, would become freeholders. There are few grantees who would not agree to these terms. The efforts of these people to redeem the soil would then be doubled, and their social condition greatly cheered and refreshed. According to the evidence of the surveyor general, before the commissioners of Lord Durham, upwards of 1,000,000 of acres of land are liable to escheat. Neither the province nor individuals have ever been disposed to put the law of escheat in force, the form of proceeding being very expensive. This law requires modification. The cost it involves has long been the safeguard of those who have forfeited their titles. Under the present system of management, the sale of the waste lands of Nova-Scotia yields but little revenue, and those lands are comparatively worthless to the objects of colonization. In enumerating them among the resources of the province, it was necessary to show as briefly as possible, what their capabilities would be under an improved mode of reform, and a comprehensive system of local enterprise.

FORESTS OF NOVA-SCOTIA.

The chief part of the wild lands is covered with the native forest, and trees in every stage of growth

and decay. To know the forest is to live in the forest. Such as would gain a knowledge of its beauty or gloom, must visit it at different seasons of the year, he must sleep upon the mosses in summer, when the earth is shaded by a living mantle, in whose folds the feathered songsters pipe forth their shrill melodies—he must see it in its gay autumnal dress of every color, and also in winter when all but the Pine tribe stand naked and leafless, bending and creaking before the cold northern breeze.

It is in these wild interior districts that the moose and cariboo still roam at large; and the bear stalks forth in search of prey. The forests of Nova-Scotia are not surpassed in beauty by those of any other part of North America. It is true that all the best timber that grew adjacent to the bays and rivers, has long since been felled and removed. The supplies now sent to the British market, are obtained by great labor, and therefore the timber trade of the province is below that of either Canada, or New Brunswick. The noble rivers of those provinces afford far greater facilities for bringing to the seaboard the produce of the wilderness, than the streams of the Acadian peninsula. If the small sized rivers have checked the timber exports from Nova-Scotia, they have been the protectors of a substantial stock for future necessities. Many fine forests may be opened hereafter, by the extension of roads and the clearing out of streams, now choked with drift wood and wind falls. There are other reasons why there is less timber shipped from this province than from the neighbouring colonies. The inhabitants are more disposed to pursue agriculture and fishing. The timber and ship-building mania have not prevailed over steady occupations, and consequent-

ly there have been far less failures and bankruptcies in enterprises which from the uncertainty, of the home duties on wood, and the fluctuations of the market, are by no means certain of profit. The deals made on the shores of the Bay of Fundy and Minas Basin with those of Cumberland, are sawed from the smaller spruces. The pines of the Atlantic bays and rivers are principally manufactured into boards and sent to the West India market. The bulk of the squared timber is collected at the North-eastern harbours, and sent thence to the ports of Great Britain. A great quantity of cord wood is shipped from Annapolis, Digby, and Yarmouth, to the United States. Sawed lumber is usually sent to the West Indies, or St. John. Railway sleepers, staves, shingles, lathwood, oar rafters, spars, hand-spikes and hoop-poles, also form a part of the exports of wood.

It is unfortunate that more extensive investigations have not been made, to ascertain the whole trade and industry of the province. No accurate information has ever been obtained of the manufactures of Nova-Scotia, except such as are contained in the custom house returns of exports to other countries. In Canada and New Brunswick no labor has been withheld to ascertain the amount of industry and capital employed in the timber trade, the quantity and value of the annual produce, and the number of mills employed in sawing. The science of political economy cannot be applied where there are no facts to analyze. The real condition and future prospects of the country must therefore rest on all the uncertainties of theory. The internal trade and productions are neither known nor regarded: the home consumption of the produce of agriculture, the forests, the fisheries, mines and manu-

factures, and the value of the various kinds of property, with the interest they yield, are unknown: and misguided legislation must result. It cannot be surprising that so little is known of Nova-Scotia abroad, when she is so little known at home. It is impossible at the present time to discover all the resources of the province, and it is equally difficult to find out how far they are employed.

POMACEÆ.

<i>Crataegus punctata</i> , Jacq.	-	-	Thorn bush.
— <i>crusgatti</i> , Ait.	-	-	Thorn bush.

AMYGDALÆ.

<i>Cerasus borealis</i> , Mx.	-	-	Choke Cherry.
— <i>Canadensis</i> , De: Cand.	-	-	Wild Cherry.

LEGUMINOSÆ.

<i>Robinia pseudacacia</i> , L.	-	-	Locust Tree.
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ULMACEÆ.

<i>Ulmus Americana</i> , L.	-	-	Elm.
— <i>Fulva</i> , Mx.	-	-	Slippery Elm.

CUPULIFERÆ.

<i>Corylus Americana</i> , Walt.	-	-	Hazle Nut.
— <i>rostrata</i> , Ait.	-	-	Beaked Hazle Nut.
<i>Fagus ferruginea</i> , Ait.	-	-	Beech Tree.
— <i>sylvatica</i> , Eat.	-	-	White Beech.
<i>Quercus rubra</i> , L.	-	-	Red Oak.
— <i>ambigua</i> , Mx.	-	-	Grey Oak.

BETULINÆ.

<i>Alnus serrulata</i> , Willd.	-	-	Alder.
<i>Betula excelsa</i> , Ait.	-	-	Yellow Birch.
— <i>lenta</i> L. Mx.	-	-	Black Birch.
— <i>papyracea</i> , Ait.	-	-	Canoe Birch.
— <i>populifolia</i> , Ait.	-	-	White Birch.
— <i>glandulosa</i> , Mx.	-	-	Shrub Birch.
<i>Carpinus Americana</i> ,	-	-	Horn Beam.

SALICINÆ.

<i>Populus balsamifera</i> , L.	-	-	Balsam Poplar.
— <i>grandidentata</i> , Mx.	-	-	Tree Poplar.
— <i>tremuloides</i> , Mx.	-	-	White Poplar.
<i>Salix nigra</i> Marsh,	-	-	Black Willow.
— <i>eriocephala</i> , Mx.	-	-	Swamp Willow.
— <i>lucida</i> , Muhl.	-	-	Shining Willow.
— <i>viminalis</i> , L.	-	-	Osier, Basket Willow.

JUGLANDÆ.

<i>Juglans cinerea</i> , L.	-	-	Butternut.
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ACERINEÆ.

<i>Acer eriocarpum</i> , Mx.	-	-	} Silver Maple, or White Maple.
— <i>pensylvanicum</i> , L.	-	-	
— <i>rubrum</i> , L.	-	-	Striped Maple.
— <i>saccharinum</i> , L.	-	-	Red Maple.
— <i>montarium</i> , Ait.	-	-	Sugar Maple, Hard Maple.
	-	-	Mountain Maple Bush.

OLEACEÆ.

<i>Fraxinus Americana</i> , W.	-	-	White Ash.
— <i>Sambucifolia</i> , W.	-	-	Black Ash.
— <i>Juglandifolia</i> Lam	-	-	Swamp Ash.

CONIFERÆ.

<i>Cypressus thyroides</i> , L.	-	-	White Cedar.
<i>Pinus alba</i> Ait.	-	-	White Spruce.
— <i>Canadensis</i> ,	-	-	Hemlock.
— <i>Nigra</i> , Ait.	-	-	Black Spruce.
— <i>Pendula</i> , Ait.	-	-	Larch, Hackmatac, tamarac
— <i>balsamea</i> , W.	-	-	Fir Tree.
— <i>resinosa</i> , Ait.	-	-	Red, or Norway Pine.
— <i>strobus</i> , L.	-	-	White Pine.
— <i>rupestris</i> ,	-	-	Grey Pine.

VACCINÆÆ.

<i>Vaccinia vitis-idaea</i> ,	-	-	Bilberry, Cowberry.
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SORBUS.

<i>Sorbus Americana</i> ,	-	-	Mountain Ash.
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BASS WOOD—(*Tilia americana*). This variety of the lime tree is rare in Nova-Scotia. On some of the richest lands of the interior, and amidst the densest forests I have seen a few trees of the *tilia*. In such situations it reaches a height of sixty feet, and sometimes a diameter of eighteen inches. The inner bark was employed by the Indians for ropes; but for this purpose it is inferior to the tough fibrous covering of

NOTE.—The above classification has been approved of by the best American botanists; the usual abbreviations of whose names are prefixed to the scientific names of the trees.

the elm. The wood is white, soft, and somewhat brittle. Its lightness recommends it for uses to which the white pine and poplar are now applied.

WITCH HAZLE—(*Hamamelis virginica.*) This hardy tree is frequently called horn beam. Its ordinary height is twenty feet and the diameter eight inches. It flourishes best on gravelly soil, where it is well drained. The trunk of the tree usually runs up like a screw, and besides being difficult to split, the fibres themselves are twisted together. The wood is hard, close grained, and tough; it is therefore employed by farmers for handles, flails, beetles, rake teeth, and a variety of other purposes. When seasoned in the shade it is admirably adapted for strong handles, and when turned in a lathe, its appearance is very beautiful. The inner bark, which is bitter, has been used medicinally.

MOOSE WOOD—(*Dirca palustris.*) In severe winters the moose frequently feed upon the bark and branches of this tree, hence its name. Neat cattle will also browse upon its leaves. It usually forms a part of the low shrubbery in the forests. The wood is of little value.

THORN BUSH—(*Cratagus p. and c.*) Of the thorn there are two varieties, which differ but little from each other, or from the European kinds. In autumn they abound with haws, upon which the partridges feed. I have several times seen a whole covey upon a single bush. These thorns are as valuable for hedges as any in the world, although they are rarely employed for that purpose. The wood is sometimes used for flails and walking sticks.

CHOKE CHERRY—(*Cerassus borealis.*) This variety of the indigenous cherry, is seen occasionally along

the borders of some of the high intervalles. It is a small tree not readily distinguished from its companion, the wild cherry. The fruit ripens early, and when eaten has a peculiar astringent effect upon the lining of the throat and fauces. The wood is seldom used.

WILD CHERRY—(*Cerassus Canadensis*.) When growing in the close forest, the wild cherry will sometimes attain a height of fifty feet. The top is then small and almost fruitless. In new clearings, that are not kept down by cattle, or the scythe, it soon springs up. The haws are widely disseminated by birds. Neither time, the elements, nor the fires that consume the timber, destroy their vitality, and they are ready to vegetate whenever a favourable opportunity offers. As an ornamental tree, the cherry has few rivals. Its growth seems to be favoured by transplantation, and many of the naked abodes of the farmers might be cheaply decorated with this hardy native of the soil. Another and higher advantage consists in the capability of the tree to produce the finest kinds of fruit. It readily receives and supports the engrafted scion of the cultivated cherry. By transplantation abundant stocks for scions may at once be obtained, and in the course of four years, rendered productive of the black heart, and other kinds of delicious cherries. I have found by experiment, that the stalk of the wild tree is quite equal to the cultivated seedling for the purposes of horticulture. The sapwood of this tree is white.—The heart is of various shades of red, which grow deeper by being exposed to the air. In the United States it is used for the wheels of wooden clocks, and when made into furniture, its beauty and durability are scarcely exceeded by any other kind of wood.—The fruit of both varieties of the indigenous cherry

has long been employed in the preparation of cherry brandy. The bark of the trunk and roots is used in domestic medicine. The infusion is a bitter astringent, of much celebrity in the cure of jaundice and dyspepsia.

LOCUST TREE—(*Robinia pseudacacia*.) This fine genus of American trees is somewhat rare in Nova-Scotia. Its papilionaceous flowers are expanded in the latter part of May, and the seed frequently ripens. It is a most elegant ornamental tree. The wood—the celebrated locust of the United States—is fine-grained, light, and very durable, for which, and other properties, it was highly praised by the late William Cobbett. Another variety of the locust has been introduced into the province, and is increasing rapidly from the seeds.

ELM—(*Ulmus Americana*.) This is one of the most beautiful trees the country affords. Its favorite habitation is on the fine alluvium of the intervalles, where it lifts its broad umbelliferous top far above its companions of the other genera. Its large dimensions, straight trunk, and pendulous branches, give it peculiar grandeur and grace. As the elm is very lofty, it is often left standing on meadows that have been cleared of their underbrush. A valley, with a river, bordered by intervalles, and interspersed with noble elms, offers some of the finest scenery of the country. The elm frequently attains a height of 90 feet, with a diameter of four feet. After rising 50 feet, it is frequently forked, and large branches stand out in all directions. In very moist situations, the trunk is almost always hollow, although the outer rim remains healthy, and the top luxuriant. I have seen trees of this kind 24 feet in circumference. They are enormous hollow tubes, like

the monument of London. Bears, or raccoons, and flying squirrels, are the occupants of their dark chambers. Upon the dry ground, the trunk is solid, and the wood tough and durable. The only use to which the wood is applied, is for fuel, for which it is excellent, yielding a large residuum of caustic ashes. From bending readily, it is made into oxbows, and sometimes mast-hoops. In former years, sled harness and ropes were made of the fibrous bark: but after they become dry, they are brittle. The wood is worthy of being submitted to careful experiment.

SLIPPERY ELM—(*Ulmus fulva*.) This variety is sometimes seen upon rich table lands. The tree seldom exceeds 50 feet in height, and 18 inches in diameter. The wood is less compact than that of the white elm; but it is strong, elastic, and durable.

HAZLE NUT—(*Corylus Americana*.) This variety of the filbert may be properly classed among the shrubs. It should be cultivated for ornament sake, and for its nuts. The *corylus rostrata* is rare.

BEECH TREE—(*Fagus ferruginia*.) This very beautiful tree is found in every part of Nova Scotia.—At numerous places it forms extensive groves, which cover the ground with an annual coat of leaves, and finally with a lively soil. Although never cultivated in the province, it is a highly ornamental and useful tree. Its proportions are governed by its situation.—It is very stately, frequently running up 50 feet, without a limb. When isolated, it is low, and branching, with long, arching limbs, that touch the ground. The beech prefers a dry gravelly bottom, and frequently succeeds a growth of spruce and fir. The timber is fine, close-grained, heavy, and very durable, if kept constantly either wet or dry. I have seen the

beech floor-timbers of vessels sound, while those of other kinds of wood were much decayed. The properties of the wood are quite similar to those of the *fagus sylvatica* of England, and which is much used in turnery, mill machines, cabinet maker's articles, musical instruments, &c. In Nova Scotia it is seldom employed except for fuel. The beech produces a crop of nuts every second or third year. The blossoms are occasionally killed by the late frosts of spring. The nuts afford less oil than the mast of more southern latitudes. They are sometimes gathered in small quantities, but the oil, which is as fine as the olive, is never extracted. The nuts are important for their fattening qualities; and in bearing seasons, the beech supplies provender for droves of swine, driven from the settlements into the woods. "Beech-nut pork" is always oily. To cultivate the beech in hedges, the nuts should be planted shortly after the first sharp autumnal frost, at which time they begin to fall. In spring, the ground beneath the groves is often covered with the young seedlings. These are greedily eaten by cattle, and the nuts are sought for by wild animals, until the shoots are six inches high. Considering the value and abundance of this kind of timber, it is surprising that it has never been an article of export to Great Britain.—Excepting a few staves, I am not aware that beech timber has ever been shipped from the Province. On the north mountains of Kings and Annapolis counties there are immense quantities of beech, which, from its proximity to the Bay of Fundy, might be cheaply transported. At present it forms a large part of the cordwood annually shipped to the United States.—The interior wilderness also contains extensive groves of this wood.

WHITE BEECH—(*Fagus sylvatica*.) The foliage of this tree can scarcely be distinguished from the other variety, and although of smaller dimensions than its fellow the red beach, it is a beautiful tree; the wood also is similar, except that it is white from the bark almost to the pith. The bark of the old trees contains a considerable quantity of tannin. The wood is esteemed for planes, lasts, mill cogs, wedges, &c.

RED OAK—(*Quercus rubra*.) The common oak of Nova-Scotia is a majestic tree, with a trunk frequently free from limbs 50 feet high, and a diameter ranging from one to four feet. The circular top, supported by large branches, is sometimes 80 feet high. The acorns are large, but seldom numerous. The annular rings are thick, and the wood is porous. The central wood is heavy, tough, elastic, and very durable. The valley of Kings and Annapolis counties formerly contained fine groves of oak and pine. In the progress of cultivation most of these have been felled. The best oaks are now found on the wilderness tracts of the western counties. On the borders of Lake Rosignol, and northward of Lunenburg, there still remains a valuable supply of that timber. The navy yard at Halifax is chiefly supplied from the latter place. Being inferior to English or American white oak, the timber has seldom been shipped to Britain. In the province it is employed in shipbuilding, for farming implements, and a variety of other uses. The bark is seldom preserved for tanning.

GREEN OAK—(*Quercus ambigua*.) This is probably only a hybrid. It is not abundant in Nova-Scotia. Its size is inferior; but the wood is supposed to possess greater strength and durability than the red oak. A small shrubby oak growing on the sides of the Gas-

pereau and other lakes is frequently cut for flails and walking sticks. It resembles the *Quercus catesbeii* of Michaux.

ALDER—(*Alnus serulata*.) This is a low shrub that inhabits the moist grounds. Alder swamps are common in every part of the country. They are the resort of the partridge, woodcock, and snipe. The wood is of little value, and is seldom used except for withs and hoop-poles, which soon decay. The bark contains much tannin, and is sometimes made into dyes and medicinal decoctions.

YELLOW BIRCH—(*Betula excelsa*.) The yellow birch is common in almost every district of Nova-Scotia, and forms a part of every hard wood forest. It prefers a soil moderately moist, and frequently associates itself with ash and hemlock. On good ground it is a magnificent tree, with a leafless trunk and wide diameter. The wood is fine-grained and durable, especially under water. The young trees supply hoop-poles and broom-sticks. At all ages it is substantial fuel. Of late but small quantities of the timber are exported; it is chiefly appropriated to the lower timbers of ships.

BLACK BIRCH—(*Betula lenta*.) This is also a fine forest tree, of early and very beautiful foliage. It attains great height, and, occasionally, four feet in diameter. This is a sweet-scented wood, remarkably close-grained, and often diversified by reddish and chocolate colored stripes and spots, like mahogany; these have given it a celebrity for tables, bedsteads, and other kinds of furniture. It is also much used in shipbuilding, for which it has obtained a high character. Formerly the timber was exported to the home market. As fuel, it burns freely, gives out much heat, and con-

sumes slowly, always leaving a great quantity of brilliant embers and finally caustic ashes. The bark may be successfully used in tanning hides. The presence of this birch always indicates a strong and productive soil.

CANOE BIRCH—(*Betula papyracea.*) The paper birch, or *bolsau a canot* of the Acadians, is one of the most majestic trees of the country. It is seen in the forests 60 feet high, without a limb. The top is frequently 80 feet above the ground. From being forked, the smaller trees are made into sled and cart tongues.—The wood is white, except the heart, which is stained light red: it is less durable than the black birch, but from being fine grained and light, it is used by cabinet makers and wheelwrights; grain shovels, wooden dishes, and other turnery, are also made of this birch.

The paper-like bark of the tree is applied to a variety of purposes. Its lamina are separated, and laid over the crevices of buildings previous to shingling and clap-boarding. A sheet folded at the corners, is a convenient vessel for containing any fluid. The Indians have always constructed their canoes of this bark.—The outer covering of a single tree has been found sufficient for two canoes, each capable of carrying ten persons. They also form it into a variety of fancy articles, which, being ornamented by colored porcupine quills, command a ready market. Formerly their dead were enveloped in bark coffins. And such is its durability that it presents perfect tubes many years after the wood has entirely disappeared. The sites of birch trees that have been buried in the alluviums are only known by the existence of flattened tubes of this kind.

WHITE BIRCH—(*Betula populifolia.*) The white birch is found in the handsome groves upon dry

gravelly soil, and intermixed with the spruces and other members of the pine tribe. It seldom exceeds 40 feet in height, and 10 inches in diameter. Both the wood and the bark are white; the latter is not durable, and therefore is seldom used except for charcoal, of which it supplies nearly all that is consumed in the country.

SHRUB BIRCH, GREY BIRCH—(*Betula glandifolia*.) This is a small but very pretty tree, growing upon the forest lands and clay bottoms. A mixture of gray birch and alder is the favourite haunt of the woodcock. The wood is hard, exceedingly tough, and elastic; but not durable, unless kept dry. The saplings are cut for hoop-poles, broomsticks and sled pins.

HORN BEAM—(*Carpinus americana*.) The horn-beam is sometimes 40 feet high, with a corresponding diameter. The wood is hard, and when seasoned, remarkably close grained and strong: it is therefore preferred for levers, rake teeth, axe handles, and a variety of other purposes. It occurs most frequently in the hard-wood forests of the high lands.

BALSAM POPLAR—(*Populus balsamifera*.) Three varieties of poplar have been observed growing wild in Nova Scotia. The balsam poplar, commonly called "balm of Gilead," is occasionally seen along the terraced borders of intervalles. Within a few past years it has been transplanted into the gardens of some of the farmers, where it increases rapidly, but exercises a deleterious influence over their vegetation. During the opening of the resinous buds, it exhales a delightful odor. The wood is soft, brittle, and consequently worthless.

TREE POPLAR—(*Populus grandidentata*.) The

common poplar is from 40 to 50 feet in height, and sometimes 2 feet in diameter at the base. This light wood possesses sufficient elasticity and strength to render it useful. It is well adapted for staves, the wings of winnowing machines, &c. Popple boards, as they are called, are durable in dry situations. The tree grows upon any kind of soil, and when isolated, it is a graceful ornament.

WHITE POPLAR, AMERICAN ASPEN—(*Populus tremuloides*.) This beautiful variety of the poplar is from 20 to 30 feet high. The bark of the young tree is of a light green, and the leaves are in constant motion, even when the air is apparently calm. The wood is light and brittle. Trees of this kind would be highly ornamental along the fence rows of fields.

BLACK WILLOW—(*Salix nigra*.) The largest of the willow is supposed to have been introduced by the early French settlers, whose ancient willow hedges are now represented by trees from 20 to 40 feet in length.

SWAMP WILLOW—(*Salix eriocephala*.) **SHINING WILLOW—**(*Salix lucida*.) These varieties are not applied to any useful purpose.

OSIER, OR BASKET WILLOW—(*Salix viminalis*.) The basket willow is not indigenous to Nova Scotia. In the few instances where it has been introduced, it produces osiers abundantly. At present all the baskets used in the country are made of ash and maple "splints." The growing of the basket willow would therefore be advantageous.

BUTTERNUT—(*Juglans cinerea*.) It is remarkable that the butternut does not grow wild in Nova-Scotia. On the banks of the Upper St. John, farther north, this nut is common, and the trees sometimes rise 70

feet. The origin of the butternut in this province may be traced to cultivation. Its planting on the borders of pastures, in the cleared districts, is worthy of consideration, for thousands of barrels of the nuts are annually brought into the province from the United States.

SILVER MAPLE, WHITE MAPLE, STRIPED MAPLE. (*acer eriocarpum*.)—A branching tree of considerable size. It blossoms early in the spring, and contains a sap that is slightly saccharine. The value of the wood has been greatly underrated. Besides possessing lightness, it has great strength, flexibility, and elasticity. Of it the Indians made their bows and arrows. Of late it has been tried for cart bodies, axles, &c., and found to be superior to any other kind of wood for those purposes. White maple gig shafts are stronger than those made of ash. With copperas the bark affords a black dye.

STRIPED MAPLE, FALSE DOGWOOD, MOOSEWOOD—(*Acer pensylvanicum*.) This maple seldom exceeds 15 feet in height, and as the moose deer feed upon its bark and limbs, it has been called moose wood. It is known by its greenish striped bark.

RED MAPLE—(*Acer rubrum*.) In the forests this maple grows to a height of 50 feet, having a round trunk, to which broad leaved lichens frequently adhere. It prefers moist ground, and is most common along the courses of the rivers, brooks, and low plains. It is an elegant tree, which puts forth its red blossoms early in the spring, when it vies with the bilberry in its gaudy attire. The wood is white, of delicate texture, and strong; but from containing a large quantity of sap, it shrinks much in seasoning. It is employed for poles, fuel, and a number of domestic purposes;

the sap yields sugar by simple evaporation; but in a less quantity than the sap of the *acer saccharinum*. With alum the bark gives a black dye, and the green wood is immediately stained by being in contact with iron. The saplings make good hoop poles.

SUGAR MAPLE, HARD MAPLE, ROCK MAPLE—(*Acer saccharinum*.) The sugar maple is one of the most valuable of American trees. The luxury that it affords while living, and the timber it supplies when felled, are equally important. This noble production of the province often attains a height of 60 feet, with a corresponding thickness. It usually selects the higher grounds and acclivities; yet it does not shun the rich banks of the rivers where the subsoil is deep, and it sometimes forms extensive groves, well known as sugaries, or sugar orchards. The seasoned wood is of a light chocolate color, heavy, close in texture, and strong. All trees yielding a large quantity of sap, readily absorb water, and, therefore, this wood is not durable when it is exposed to moisture. The woody fibres are often curiously waved, curled, and dotted; hence we have "curled maple" and "birds eye maple." From the beauty of these varieties, the wood is extensively employed by cabinet makers for furniture, and small quantities have been shipped to Great Britain. The large excrescences that sometimes grow upon the tree, are cut off and turned into bowls and other kitchen articles. As fuel it is superior, and after combustion it leaves a large residuum of caustic ashes, which aid in the manufacture of domestic soap. It is to be regretted, that so many fine groves of sugar maple, have disappeared before the axe and the fire. Such groves are valuable for the sugar they are capable of supplying annually. Indeed the cultivation of

the tree would be profitable for that article, independant of the timber. The method of making sugar from the sap, will be treated of under the head of domestic manufactures.

MOUNTAIN MAPLE BUSH—(*Acer viminalis*.)—Is a small tree inhabiting the highest hills and slopes.—The properties of the wood are little known.

WHITE ASH—(*Fraxinus Americana*.)—The white ash grows most stately on the intervalles, banks of small streams, and moist lands, where it rises 50 feet, and often without a limb to within 15 feet of the branching top. It seems to court the society of the elm, and with it lifts its head far above the clusters of white maple, and other shrubbery. The sapwood is white, and like the oak, the annular rings are perfect and very distinct. From its ability to bend, and retain its position afterwards, it is used for a great variety of purposes, and enters largely into the construction of implements of husbandry. It is also made into oars and staves, and shipped to the West India market.—The bark contains a good share of tannin. This valuable wood is not abundant, except in the remote forests.

BLACK ASH—(*Fraxinus Sambucifolia*.)—This tree accompanies the white ash, and seeks ground that is constantly wet. The annular rings are distinct, and readily separate from each other by percussion. The wood is therefore pounded and torn up into strips, or "splits," as they are called, which are made into baskets and chair-bottoms. It also supplies axe handles, handspikes, &c.

SWAMP ASH—(*Fraxinus Juglandifolia*.) Is a small variety, with leaflets from 6 to 15 inches long.—The wood is seldom used.

WHITE CEDAR—(*Cypressus thyroides*.) The pine tribe has always excited much interest in this country, the woods having created an extensive trade with Great Britain and the West Indies. There are upwards of twenty species of pine in North America, ten of these are natives of the British provinces. Although the white cedar is abundant in Prince Edward's Island, New Brunswick, and the neighbouring territory, it is very scarce in Nova-Scotia. The trees grow in wet ground, and in cedar swamps, they stand close together, amidst almost impenetrable groups of windfalls. The wood is light and strong, and, excepting the sap, it is almost imperishable. It is very valuable for rails, railway sleepers, posts, and many other objects.

WHITE SPRUCE—(*Pinus alba*.) This resinous evergreen flourishes as far south as lat. 43°. It is therefore a common tree in Nova-Scotia and Canada, where it is called by the French inhabitants *epinette blanche*. Its growth is nearly equal to the European silver fir. The long tapering trunk is surmounted by a spear-shaped top, that stands above the ordinary level of the forest, bending and creaking to every breeze. The wood is employed in buildings of every kind, and sawed into deals and boards for the home and foreign markets. The small roots are very strong, so long as they are kept moist; they are used by the Indians for cords. With them they sew up the seams of their canoes, barks, &c., and with the resin they make them perfectly tight.

BLACK SPRUCE—(*Pinus nigra*.) The bark of the trunk and branches of this variety is of a blackish colour. It is one of our most lofty forest trees, towering above the oak and the elm. Seen at a distance, the lanced shaped tops of the spruces appear to dot the

forest over, and rise in an extra crop above its top level. It occasionally stands 120 feet high. In the forest, the trunk is limbless from 40 to 70 feet, hence its value for squared timber and "saw-mill logs." In open spaces, the branches occupy its whole length; the summit is a very acute angle, terminated by a single twig. Such trees are usually selected for taking observations in the wilderness. If the climber loose his hold, the abundance of branches below arrest his fall, and enable him to catch again. They are sometimes so close and thickly leaved, that 20 men may conceal themselves in a single tree. I have often ascended to the tops of lofty spruces, and been swung about in the breeze with every feeling of safety, nor is the sensation thus produced at all unpleasant.

HEMLOCK—(*Pinus Canadensis*.) This is a large and very beautiful tree, bearing in its foliage a resemblance to the yew. It occupies a range even from Carolina to the northern part of Canada. It prefers a soil of medium moisture, and appears in large groves, mixed with yellow birch, spruce, and sugar maple. It is also lofty, and the largest trees have a diameter of four feet at the base: but the trunk lacks the symmetry of the spruce and pine, and is often twisted and "shakey." The wood has long been held in low estimation, yet of late, in some of the populous villages, necessity has brought it into use for buildings, and its value is better understood. When immersed in water, or buried in the ground, the hemlock is durable; it is therefore employed for wharves, fence posts; and within the last three years a market has been made for it in the mother country, where it is laid down for railway sleepers. It has long been employed for lathwood, of which large quantities are shipped. Granaries, or grain bins

made of hemlock are not attacked by mice. In North America the bark is universally used in tanning leather.

LARCH, HACMATAC, TAMARAC—(*Pinus pendula*.)—The larch ranks among the most beautiful and valuable trees of British America. The trunk is straight, and gently tapering, with a diameter ranging from one to two feet. Its top is a close tuft, with pendant branches. The wood is stronger and more durable than any other of the pine tribe, it is therefore highly valued for ship building, and eagerly sought for to construct such works as are exposed to alternate wet and dryness. It is admirably adapted for doors, floors, and other parts of dwelling houses, and when smoothed and polished, it is by no means inferior in beauty. Its durability for posts is next to cedar; for shingles, tree-nails, cooper's work, water wheels, and many other purposes, it is almost unrivalled. The superiority of larch railway sleepers has created a demand for the wood in England. Groves of large hacmatacs are by no means common in Nova-Scotia, but the tree is springing up in all directions, as the successor of forests destroyed by fire. Many waste tracts are covered by young larches, and this valuable wood promises to be more abundant in the course of a few years than it has been heretofore. Every care should be taken to preserve the young timber.

FIR TREE—(*Pinus balsamea*.) The common fir grows abundantly, and to great perfection in Nova-Scotia, being frequently seen in thick groves upon lands that had been cleared of birch, beech, and sugar maple. The ordinary height of a full grown tree is fifty feet, and the diameter 15 inches. The trunk tapers away gradually, and the summit is a sharp

point. In wet grounds it is frequently hollow at the heart. The wood is white, quite strong; but very brittle, and easy to rive. It is most extensively used for poles, from 12 to 20 of which are taken from a single full grown tree. It also affords light and durable boards, staves, &c. In Prince Edward's Island it is sawed into deals, which sell readily in the British market. The balsam, or resin, is used for medicinal purposes by the inhabitants, and the *chantier* and barn of the backwoodsman, are frequently covered with the bark.

RED, OR NORWAY PINE—(*Pinus resinosa*.) The *pinus resinosa* frequently called pitch pine, and yellow pine, grows in beautiful close forests, with clean bottoms. It seldom exceeds 70 feet in height, and the diameter is from two to three feet. It prefers a dry sandy loam. The bark is red, and the sapwood is from two to three inches in thickness. The true wood is strongly impregnated with resinous matter, and is strong and durable. It is admirably adapted for floors, and would command a good price in the home or West India market.

WHITE PINE—(*Pinus strobus*.) This is the richest production of the forests of British America. As a staple article of commerce and domestic use, it is unrivalled. It is the largest and most valuable tree eastward of the Rocky Mountains; frequently it rises to the height of 200 feet, with a trunk 5 feet in diameter. I have measured pine trees on the late disputed territory, between New Brunswick and the United States, that were eighteen feet in circumference.—The lofty pine towers far above his indigenous associates, and is leafless except at the very summit. It is the monarch of the wilderness, which seems to aspire to

reach the clouds, yet it bends before the gale, and waves its umbrella-shaped top high in the air. When it is felled, it crushes down the smaller wood, and by striking uneven ground, it is sometimes broken. This noble tree flourishes best on deep, sandy soil, although it will not refuse to grow on ridges of granite, and amidst shapeless rocky boulders. The wood is straight, fine, light, free from knots, and most easily worked : hence it is almost universally employed. It supplies masts for the largest ships, square timber, deals, boards, scantling, clapboards, shingles, and the wood used for the finishing of every kind of carpenter's work. Its applicability to the common requirements of modern architecture have rendered it by far the most valuable of all the native trees.

The fertile valleys of Kings and Annapolis counties, the sandy soils of Hants, Colchester, Cumberland, and Pictou were formerly occupied by majestic oaks and pines. The enormous size and great durability of the latter, are attested by the stumps that still remain in the soil. Large pines are now only found in the remote wilderness districts previously described.

GRAY PINE—(*Pinus rupestris*.) This is a small coniferous tree, found as far north as Baffin's Bay. It is a mere shrub, growing in rocky and barren districts.

BILBERRY—(*Vaccinia vitis-idaea*.)—The bilberry, or giant whortleberry, is from 12 to 20 feet high.—Early in May, and before the shrub has put forth its leaves, it is adorned with a profusion of flowers ; the appearance of which is the farmers signal for planting Indian corn. The wood is fine, hard, and strong, and well adapted for turning.

MOUNTAIN ASH—(*Sorbus Americana*.) This is another beautiful shrub from 10 to 20 feet high. It

produces large clusters of red berries, which sometimes hang upon the tree during the winter. Being a very pretty ornament, it has been transplanted from the woods into gardens, where it grows in great perfection.

LANDS KNOWN BY THEIR TREES—FIRES—WILD
BERRIES.

The forests of North America have ever been exposed to destructive fires, which, from time to time, sweep over large tracts with devouring energy, prostrating the lofty groves, consuming the timber, and covering the surface with quenched brands, charcoal, and ashes. It is erroneous to suppose that such fires only accompany the clearing of the lands. There are traditions among the Indians, of great fires that devastated immense tracts, before the country was visited by Europeans. The charcoal and charred trunks of trees found in peat bogs and alluviums, are evidences of ancient fires.

In dry summers the woods are sometimes fired by lightning; but more frequently by the carelessness of the Indians. The wadding discharged from a gun has been known to ignite dry leaves. In Nova-Scotia the most common cause of such burnings is, the recklessness, or carelessness of the new settler. During the heat of the summer months, the resinous woods are very inflammable. The dry leaves on the ground are like a train of gunpowder, and the flame runs over them with astonishing rapidity. The pines, spruces, fir, and hemlock, are ignited, and the surface of the earth is wrapt in flame, which spreads far and wide; until it is arrested by a shower, rivers, lakes, or green bogs, or by forests of beech, birch, and maple; the juicy leaves of which, and the green herbage of

the surface, check the progress of the devouring element. A forest on fire is a terrific sight. The resins of the lofty spruces promote their destruction. From the kindled spark, the flame rushes upwards, and in an instant the noble evergreen is a lofty column of crackling fire. The top of the pine is like a red flag, while the underbrush beneath affords the broad lashing flame that completes the destruction of the earth's vegetable covering. The rarefaction of the air by the heat, produces a brisk gale, that roars through the embers with the noise of thunder, driving the hot cinders, fire-brands, and clouds of suffocating smoke, still onward through the forest. Behind the devastating wave the earth is a blackened mass, covered with smouldering trees and spires of charred wood, the remnants of the stately forest. At night a lured glare of light hangs over the devoted district, and the clouds reflecting their sickly rays, hang like beacons over the still burning surface.

In the summer of 1825, the whole district of Miramichi, in New Brunswick, was laid in ruins; 6,000 square miles of forest were in flames; 595 buildings; 875 head of cattle; and 160 persons, were destroyed; with property to the amount of £60,000. So great was the heat that the fish in the rivers were killed. At the same time there were great fires in Nova-Scotia, and scarcely a summer passes by without the occurrence of calamities by fire. Many of the finest groves of timber have been thus destroyed, and to prevent the evil, the most rigid legal enactments are inadequate. By these conflagrations the whole appearance and character of the wilderness is changed, and extraordinary revolutions take place in the vegetable kingdom.

When the trees of the forest have been destroyed by fire or cut down by the axeman, and the land neglected afterwards, of whatever kinds they were, other trees succeed them. Land cleared of its lofty pines and spruces, is soon covered by poplars, maples, larch, fir, wild cherry, cedar, and whortleberries. Sugar maple, beech, and larches, are frequently succeeded by red pine, spruce, raspberry, and gooseberry bushes. Hemlock land is soon overspread by alder and maple. Oak is followed by fir and spruce. The original kinds of trees seldom appear in the second growth; but after the second growth has been removed, the first, or one differing from both, occupies the ground. Lands that formerly bore yellow birch and hemlock, are now bearing sapling oaks and poplar. Some of the old pine lands that have been under cultivation nearly a century, if laid down to pasture, will soon be covered with shrubby birch and poplars. This rotation seems to be a law of nature, and intimates to the farmer the necessity of changing his crops. In general the evergreens are succeeded by the hard woods. These are noble, white, and green crops.

Much stress has been laid on the discovery of the qualities of the soil by the trees growing upon it. Some trees are found most abundant and thrifty in certain districts; but this depends more upon the dryness or moisture of the soil, than upon its peculiar properties, as the hard woods are succeeded by the evergreens, and *vice versa* it is quite impossible to determine the character of the soil by the presence of either, nor would the difficulty be diminished, if the history of the ancient forest were well understood. There are frequent instances where the surface once occupied by

large beeches, birches, and maples, is finally overrun with laurel and whortleberry bushes, which have been supposed to indicate extreme sterility. Farmers have been agreeably disappointed in finding such lands fertile. I have seen fine wheat, barley, and oats, grown upon laurel and fern land, and patches almost barren, are sometimes studded with close groves of hardwood saplings.

The surface of the earth in its natural state in the wilderness, is covered by decayed leaves and seeds: but so long as the soil is shaded by the foliage of the trees, those seeds cannot vegetate. The fires destroy the seeds that remain on the surface, or such as have fallen from the last growth. But the germs of numerous plants are deeply buried in the soils of North America, and no sooner is the forest removed, and heat and light let down upon them, then they spring up. It is indeed surprising, that when a clearing is made in the most remote wilderness, and where the vegetation consists altogether of large forest trees, strawberries, raspberries, and other fruits immediately appear, with the Canada thistle, sorrel, and other noxious weeds. Bears, foxes, and other wild animals feed upon berries, and their digestive organs do not destroy the germinating properties of their seeds. The same may be said of hawks, and other carnivorous birds. These animals disseminate very widely the germs of all wild plants. The seeds of many vegetables, such for instance as the common thistle, have wings, and fly away before the winds, and thus the distribution of seeds may be accounted for. The feathered tribes have been chiefly instrumental in planting the newly formed coral reefs of the Pacific ocean, and in conveying embryo plants over the great continent of America.



The frightful surface burnings that destroy the timber, and render extensive areas black and leafless wastes, are always viewed as calamities; yet they aid in the disintegration of the rocks, they impart alkaline matter to the soil, and restore to it what it had given and long sustained in great perfection and beauty, and there can be little doubt that their ultimate results are beneficial. They are Nature's agents in fitting the earth for the supply of those farinaceous plants that support man and his contemporary animals.

CHAPTER V.

The Fisheries of Nova-Scotia—Value of, Treaties of and Negotiations, Aggressions of the French and Americans, Violation of Treaties—Anecdotes of—Shipping employed by France and the United States—Quantity of Fish taken—Advantages enjoyed by the Americans—Bounties—Protection of the Fisheries—Suggestions for improving—Marine and fresh water Fishes of Nova-Scotia and New-Brunswick—Fisheries injured—Modes of Fishing—Fishing Seasons—Habits of Fishermen—Fish taken—Domestic consumption—Exports of—Shore Fishery—Deep Sea Fishery—Number of Vessels and Boats employed—Tables and Returns.

Of all the resources of British America, there are none more valuable than the fisheries, which, under proper protection and management, would supply the elements of vast export, and consequently of provincial wealth. Their productions may be secured without the outlay of much capital, and as they always command a ready market, there is seldom much risk in fishing enterprise. The utter neglect of the fisheries at many places and the imperfection of the system generally pursued, are proverbial; yet, the inhabitants of the province view the success of this branch of industry, in its season, with more interest than they do the ripening of agricultural crops, for fish is not only a staple article of commerce, but also one of extensive home consumption. The farmer, therefore, justly considers the annual catch highly important to his interest.

Among all the negotiations that have been carried on by Great Britain with France and the United States, none have been more weak and impolitic than those that relate to the fisheries of British America. The disregard of existing treaties by the people of the republic, who are permitted to fish along the coasts, has greatly discouraged the colonists, who are frequently insulted, and driven away from their rightful inheritance. A very able report was drawn up by a committee of the house of assembly in 1837, on the history and state of the fisheries. This report, which appears in the journals of the house for that year, exhibits an invasion of British rights and liberties, and a contraband trade almost unparalleled in modern history. Nor have all the remonstrances of the colonists, and their efforts to protect their own maritime property, been successful in checking an evil, the most fatal in its consequences, to their interests.

The aggressions of the French and Americans upon our fisheries, have been set forth by every colonial historian. The legislatures have made the subject one of earnest remonstrance and the merchants and fishermen have reiterated their complaints from year to year. But all these have not aroused the parent government, and more than one colonial minister has advocated the policy of the United States, rather than the interests of the provinces bordering upon the Atlantic, many of whose inhabitants scarcely enjoy a peaceable foothold upon the land. The result has been, that the fisheries are injured, the best stations are occupied by foreigners, and an illicit trade carries away the best catch of our shoremen; while our young and active fishermen are drawn from the pro-

vince, to perpetuate a system, by which they are yearly exiled from their homes.

It has been established by the legal authorities of the crown, that the treaty of 1783 was annulled by the war of 1812, and that the "rights of fishing of the citizens of the United States must now be considered as defined and regulated by the convention of 1818." The same authority has declared that by that convention "American citizens are excluded from any right of fishing within three miles of the coast of British America, and that the prescribed distance of three miles is to be measured from the headlands or extreme points of land next the sea of the coast, or of the entrance of the bays, and not from the interior of such bays, or indents of the coast, and consequently that no right exists on the part of American citizens to enter the bays of Nova-Scotia, there to take fish, although the fishing being within the bay may be at a greater distance than three miles from the shore of the bay."

Notwithstanding the plain and obvious meaning of the treaty, it is well known that the Americans fish within less than two miles of the shore : they set their nets in the coves and harbours, and occasionally, by superior force, they drive the inhabitants away, overhauling and cutting their nets. They also land and purchase bait in exchange for gin, tobacco, and other "notions." They occupy the Magdalen Islands in the Gulph of St. Lawrence, in the fishing season, as freely as British subjects. From 800 to 1000 of their vessels not only pass through the Strait of Canseau, but make it a place of resort to obtain their fuel.— That strait scarcely exceeds a mile in breadth, to the distance of fifteen miles, and may be said

to divide Nova-Scotia into two parts. I have seen them at a number of the unoccupied harbours of Nova-Scotia, New-Brunswick and Prince Edward's Island, setting and clearing their nets. The rule with them is to follow the fish and not the treaty, and their maxim is, where "Providence sends the fish, we will send the fishermen."

That part of the treaty which humanely permits them to enter our harbours in distress, or for fuel, and water, is made a complete loophole for evasion.—While one part of a crew is filling a water cask, the remainder are collecting bait, fishing, or clearing decks of the offal so pernicious to the fisheries. I was informed of a vessel that carried two bowsprits, one for sea service, and another, which had been sprung, for inshore work. With the latter, the skipper could enter any of the harbours by night, or by day. Similar schemes are well known and practiced.

Early in the spring season, the harbours of the eastern states pour forth fleets of schooners and shallops, destined for the coasts of the British provinces. They are well supplied with provisions, salt, empty casks, seines, nets, twines, hooks, jigs, and bait-mills, and every article required for the capture of fish of all kinds. Of these craft there are two descriptions, the real fisherman and the "speculator in fish," the latter carry pork, flour, molasses, tobacco, gin, and almost every article required by the provincial fisherman. These vessels are soon "out of water," spring a mast, or some of the crew fall sick, and they are steered into some of the estuaries or harbours, where they are kindly relieved, at least of their superfluous cargo, by the inhabitants. A barter traffic is immediately commenced. Green, salted, and half-dried fish are taken

in payment for American goods, which from being landed free from the payment of any duty, are given to the fishermen at a lower price than those obtained from the established merchant. The business of the smuggler is soon completed, and always in time to keep clear of the revenue officer; and he departs, leaving the butts and flakes of the shoremen fishless. A few hours afterwards the crew of the foreign visitor are perhaps engaged in drawing up the finny broods of the sea, or they steer to another inlet to strike new bargains. Should a British cruizer appear, or a preventive officer reach the deck, there are plenty of holes in the treaty to creep out at. If the vessel and cargo are seized under the law, the act is soon made a serious matter of negotiation, and forsooth, a war is threatened by the apprehension of an American citizen, found in the act of carrying on a contraband trade.

Some of the American skippers will relate their adventures with all the *sang froid* and good nature imaginable. A very clever old captain told me, that he "once ran into St. Mary's. Tidings of my doings had got out, and on the night of my arrival, a revenue cutter came to anchor right along side of me. What to do I did not know. I could not get away as the wind blow'd a stiffer right into the harbour. All at once I had it. In less than no time I cleared away for action. I sent ashore and borrowed two young calves from one of my old customers, and lifted them on deck. One of them squalled out prodigiously. I stowed all the cordwood I had abaft the foremast; but the best of it all was, I dressed two of my Nantucket boys in women's clothes, topping them off with a pair of bonnets sent in my vessel as a venture. By the first peep of day I set them to washing shirts

on deck, and as soon as I seed the crew of the cutter begin to move, which they did not until long after sunrise, I went in my little boat and axed the people of the cruiser if they would give me a bit of old canvass to mend my mainsail, and sure enough they gave me a fairish piece. There we all lay till 12 o'clock, the women washing and drying clothes, and our calves blating like mad for their mothers. The wind came round, the cutter got under weigh, and as she rounded past us, the captain hailed me, and asked if I would sell one of the calves. I told him they were a particular breed and not for sale, 'I think that remark' said he, 'will apply to your whole crew,' not a bad joke was it, and after laughing heartily at me, my washerwomen, and my calves, my gentleman sheared off. When I seed that his jib was the right way, I made a low bow to him, and after he was clean gone, I sent my calves on shore, turned my washerwomen into boys again, and finished the trade of the Peggy Ann." "In another instance" said this cute old captain, "it was stark calm, and as the fog cleared up a little, I saw I was in the very jaws of a ship of war, and I almost gave up all for lost ; however, as they were lowering their jolly boat to board me, I skulled off to them, all alone, in my little punt, and asked the people in the ship if they knowed what was good for the measles. I could hear them laugh from stem to stern. A big fat man, they called the doctor, told me to keep my patients warm, and to give them hot drinks. It was enough ; they took care not to come near the Peggy Ann that time."

By such and similar practices, the merchants who advance to the fishermen, goods legally entered, are defrauded, the resources of the country are thrown

away, and the morals of the people contaminated. Aggressions and illicit trade are not confined to any part of the coast. During the fishing season, American vessels enter the harbours and surround the island of Grand Manan ; they are scattered along the shores of the Bay of Fundy, and visit the bays, harbours, and inlets of Nova-Scotia, Cape Breton, Prince Edward's Island, and coast of Labrador. They are also very numerous in the Gulph of St. Lawrence, where they occupy the best banks; to the exclusion of British subjects. American fishermen have landed upon the shores, taken the bait, destroyed the nets, and even plundered the dwellings of the harmless inhabitants.

In 1829, France employed from 250 to 300 vessels in the fisheries on the British American coasts, and 25,000 sea-going fishermen, who by treaty are not permitted to become residents. Their vessels are from 100 to 400 tons burthen, and carry from 40 to 120 men each. In the above year, the Americans employed in their fisheries 1,500 vessels, manned by 15,000 seamen, and took 1,000,000 quintals of fish; and 3,000 tuns of oil. At the lowest estimate, one quarter of these vessels fish within the bounds prescribed by the treaty. At that period the British catch was 2,000,000 of quintals annually.* This estimate has recently been brought up to 1847, by Patrick Morris, Esq., Treasurer of Newfoundland, and who, in his recent work, has ably set forth the pernicious effects of the concessions made to the French and Americans.

By this writer, the French catch is estimated, from

* British North American Colonies, by George R. Young, Esq., of Halifax, Nova-Scotia. London, Ridgway & Sons, Piccadilly, 1834.

official documents, at 1,000,000 quintals, the bounties at £125,000 sterling per annum, and the number of fishermen employed at 25,000. The American fishery is estimated to employ 37,500 men, from 1,500 to 2,000 vessels, with a bounty of twenty shillings per ton, and the catch is estimated at 1,500,000 quintals. The British fisheries on the coast of Newfoundland are estimated at 25,000 men, and the catch is estimated at 1,000,000 quintals. Perhaps the whole of the British North American fisheries, including the Bay of Fundy, the coast of Nova-Scotia, the Gulph, Gaspé, Labrador, and Newfoundland fisheries, extending along a coast of about 3,000 miles, do not exceed in value £1,500,000 sterling, while two and a half millions of quintals are annually carried away from our doors by the French and Americans. The most pernicious effect, as a national consideration, is that by means of their bounties, the French and Americans are enabled to monopolise the bank fishery, the best nursery for seamen, while the British fishery is confined to boats along the coast.

It is impossible for the British and Colonial fisherman ever to compete with the French and Americans in these fisheries, so long as the latter are cherished and stimulated by bounties, that not only encourage the taking of fish in our waters, but draw away from us our best fishermen. This state of things can only be prevented by carefully protecting the privileges that still remain to us, by giving a bounty to our own fishermen, and by compelling foreigners to fish in the manner laid down by the treaty. Mr. Morris has proposed that the French and Americans be allowed to fish in all our bays and harbours, provided they will

discontinue their bounties. But the inhabitants of these provinces have been taught to know that such permission would not only drive them from the deep sea banks ; but also prove fatal to their shore fisheries.

The French are restricted to fishing with common hooks and lines. Within a few years past they have invented, and now employ bultows, of which some vessels have 10,000 fathoms. These bultows are most detrimental, and will prove extremely destructive to the Bank as well as the inshore fisheries.

It has been supposed that the British armed vessels upon the North American station are sufficient to check the evils so long complained of. The length of the coast, including the bays and other indents to be guarded, exceeds 2,000 miles, a fleet of 50 sail would therefore be insufficient for the coast guard, and our men of war are much too large for this kind of service. Nor would the skill of their commanders enable them to contend with swarms of chary and ingenious fishermen, who shelter themselves under the terms of a treaty, which by numerous pretexts may be evaded.

It had long been hoped that the remonstrances annually sent from these colonies to the home government, would finally bring protection : but so late as the 19th May, 1845, a despatch to Lord Falkland, then governor of Nova-Scotia, states that " After mature deliberation her Majesty's government deem it advisable for the interests of both countries, to *relax the strict rule of exclusion exercised by Great Britain over the fishing vessels of the United States.*" Another despatch of the 17th of Sept., 1845, brought the unwelcome tidings, that the Bay of Fundy "*has been thrown open to the Americans, under certain restric-*

tions." No policy could be more fatal to the welfare of Nova-Scotia, than this gradual yielding up of her maritime resources to the neighbouring States.

The abundance and cheapness of bread and other provisions, enable the Americans to fit out their vessels at a lower rate than they can be supplied in any of the ports in the province. The tonnage and other bounties on fish granted by the eastern States, have stimulated their inhabitants in this branch of industry, and to their credit it may be added, they are more skilful and indefatigable in taking and curing the finny inhabitants of the sea, than the general run of fishermen upon our shores.

In 1839, the export of mackarel from the port of Halifax was only 19,127 barrels. In 1841, it was 35,917 barrels; and in 1842, 54,158 barrels. This increase has been ascribed to the employment of revenue cutters, which also protect the fisheries, and by enforcing the restrictive regulations, upwards of 160 sail of American vessels, which carried away 30,000 barrels of pickled fish annually, from the shores of Cape Breton, have been kept at bay. The protective operations have had a corresponding influence upon the trade of the Americans to our waters; for in 1835 they had 61,082,11 tons of shipping employed in these fisheries, which in 1844 had decreased to 11,775,50 tons. Since that period the fisheries carried on by British subjects have continued to prosper. It has been deemed necessary thus briefly to advert to the state of our maritime privileges, for although they are important resources, their value can only be estimated by the benefit derived from them by British subjects, and not by the citizens of foreign States.

MARINE AND FRESH WATER FISHES OF NOVA-SCOTIA,
NEW-BRUNSWICK AND PRINCE EDWARD'S ISLAND.

MAMMALIA.*

<i>Phoca vitulina</i> , L.	-	-	-	Common Seal.
— <i>cristata</i> , L.	-	-	-	Hooded Seal.

CETACEA.

<i>Delphinus</i> , Delphis,	-	-	-	Grampus, or porpus.
— <i>phocæna</i> ,	-	-	-	Gladiator, Sword fish.
<i>Balæna mysticetus</i> , L.	-	-	-	Common Whale.
<i>Anarnacus Greenlandicus</i> ,				Black Fish.†

CARTILAGINOUS FISHES.

<i>Petromyzon marinus</i> ,	-	-	-	Sea Lamprey Eel.
— <i>fluviatilis</i> ,	-	-	-	Freshwater Lamprey Eel.
<i>Scyllium canicula</i> ,	-	-	-	Sea Dog, or Dog Shark.
<i>Carcharias glaucus</i> ,	-	-	-	Blue Shark.
— <i>vulpus</i> ,	-	-	-	Thrasher.
<i>Raja batis</i> ,	-	-	-	Skate.
<i>Accipenser sturio</i> ,	-	-	-	Sturgeon.

OSSEOUS FISHES.

<i>Ostracion triqueter</i> ,	-	-	-	Trunk Fish.
<i>Salmo salar</i> ,	-	-	-	Salmon.
— <i>trutta</i> ,	-	-	-	Salmon Trout.
— <i>fario</i> ,	-	-	-	Common Trout.
— <i>hucho</i> ,	-	-	-	Hunchen Trout, Togus.
<i>Clupea harengus</i> ,	-	-	-	Common Herring.
— <i>menhaden</i> ,	-	-	-	Menhaden.
— <i>alosa</i> ,	-	-	-	Shad.
— <i>vernalis</i> ,	-	-	-	Alewife, Gaspereau, Kiack.
— <i>minima</i> ,	-	-	-	Brit.
<i>Esox lucius</i> ,	-	-	-	Pickarel.
— <i>belone</i> ,	-	-	-	Sea Pike.
<i>Cyprinus auratus</i>	-	-	-	Golden Carp.
— <i>erysolencus</i> ,	-	-	-	Shiner.
— <i>atronasus</i> ,	-	-	-	Minow.
— <i>oblongus</i> ,	-	-	-	Chub.
— <i>teres</i> ,	-	-	-	Sucker.

* The Mammalia have been classed with the fishes in the present instance for the sake of convenience.

† I observed this fish in the bays of Cape Breton.

<i>Leuciscus rutilus</i> ,	-	-	-	Rosch.
— <i>vulgaris</i> ,	-	-	-	Dace.
— <i>alburnus</i> ,	-	-	-	Bleak.
— <i>cephalus</i> ,	-	-	-	Chub.
<i>Gadus morrhua</i> ,	-	-	-	Common Cod.
— <i>rupestris</i> ,	-	-	-	Rock Cod.
— <i>arenosus</i> ,	-	-	-	Shoal Cod.
— <i>merluccius</i> ,	-	-	-	Hake.
— <i>taucaud</i> ,	-	-	-	Tom Cod.
— <i>fuscus</i> ,	-	-	-	Frost Fish.
<i>Brosmus vulgaris</i> ,	-	-	-	Cusk.
<i>Morrhua eglefinus</i> ,	-	-	-	Haddock.
<i>Merlangus vulgaris</i> ,	-	-	-	Whiting.
— <i>pollachius</i> ,	-	-	-	Pollock.
<i>Raniceps blenoides</i> ,	-	-	-	Garter Fish.
<i>Platessa vulgaris</i> ,	-	-	-	Flounder.
<i>Hypoglossus vulgaris</i> ,	-	-	-	Halibut.
<i>Solea vulgaris</i> ,	-	-	-	Sole.
<i>Cyclopterus lumpus</i> ,	-	-	-	Lumpfish.
— <i>minutus</i> ,	-	-	-	Lumpsucker.
<i>Echeneis remora</i> ,	-	-	-	Sucking Fish.
— <i>Naucratus</i> ,	-	-	-	
<i>Anguilla vulgaris</i> ,	-	-	-	Common Eel.
<i>Conger muræna</i> ,	-	-	-	Conger Eel.
<i>Anarchicas lupus</i> ,	-	-	-	Wolf Fish.
<i>Labrus tautoga</i> ,	-	-	-	Tautog.
— <i>tautoga fusca</i> ,	-	-	-	
— <i>tautoga alia</i> ,	-	-	-	
— <i>coricus</i> ,	-	-	-	Blue Perch.
— <i>squeteague</i> ,	-	-	-	
— <i>maculatus</i> ,	-	-	-	
<i>Scorpena porcus</i> ,	-	-	-	Yellow Sculpin.
— <i>scrofa</i> ,	-	-	-	
— <i>gibbosa</i> ,	-	-	-	
<i>Mugil albula</i> ,	-	-	-	White Mullet.
<i>Mullus barbatus</i> ,	-	-	-	Red Mullet.
<i>Pirca fluviatilis</i> ,	-	-	-	Perch.
— <i>labrax</i> ,	-	-	-	Striped Bass.
<i>Bodianus leucos</i> ,	-	-	-	Silver Perch.
— <i>rufus</i> ,	-	-	-	Red Perch.
— <i>flavescens</i> ,	-	-	-	Yellow Perch.

<i>Cottus gobie</i> ,	-	-	-	River Bullhead.
— <i>quadricornus</i> ,	-	-	-	Sea Bull.
— <i>scorpius</i> ,	-	-	-	Sculpin.
— <i>cataphractus</i> ,	-	-	-	Armed Bullhead.
<i>Scomber grex</i> ,	-	-	-	Chubbed Mackarel.
— <i>vernalis</i> ,	-	-	-	Spring Mackarel.
— <i>crysos</i> ,	-	-	-	Yellow Mackarel.
— <i>plumbeus</i> ,	-	-	-	Horse Mackarel.
— <i>maculatus</i> ,	-	-	-	Spanish Mackarel.
— <i>scomber</i> ,	-	-	-	Common Mackarel.
— <i>centronotus ductor</i> ,	-	-	-	Pilot Fish.
<i>Xiphias gladius</i> ,	-	-	-	Sword Fish.*
				Capeling.
<i>Osmerus eperlanus</i> ,	-	-	-	Smelt.
				Sunfish.
<i>Asterias rubens</i> ,	-	-	-	Starfish.
<i>Sepia media</i> ,	-	-	-	Squid.

There is perhaps no branch of zoology so imperfectly understood, as that which relates to fishes. Several varieties of fish on the coasts of North America, have scarcely been noticed by naturalists; and the habits and characters of others have not been discovered. It is not necessary for our present object to enter upon any enquiry of this kind; but rather to notice such kinds of the finny tribes as are valuable for food or oil.

SEAL.—Of the numerous kinds of seals, only two may be said to frequent our shores, and those scarcely appear in the latitude of New York. In the Gulph of St. Lawrence, on the coast of Newfoundland, Labrador, and other places further north, the kinds and especially the numbers, are greatly increased. The seal fishery at those places is therefore one of importance. The common seal was much more numerous

* There are doubtless more fishes than are here named. The author has only noticed such as he has seen. Their arrangement is that of Jerome Smith, M. D.

on the coasts of Nova-Scotia formerly than of late years. At present they are seldom captured. A hooded seal was taken a few years since in a dock belonging to John Wilson, Esq., at St. Andrews. When the French and English first began to frequent Canseau as a fishing station, walruses, or sea-cows, were numerous, and their teeth, which equal the ivory of the elephant, formed a valuable article of trade. When the ice-fields became closed, these animals would sometimes land and sport in the snow. A century ago they would land upon and cross Prince Edward's Island. Under such circumstances, they were attacked by bands of fishermen with spears, and great havoc was made among them, until they finally disappeared. At North Cape their bones are still found in the forest. The weight of a single walrus would sometimes exceed two tons. They are now said to be on the increase, although I saw only two walruses during my visit to all the island shores.

GRAMPUS, OR PORPUS.—Porpuses are supposed to pursue the herring, and are seen in droves, lifting and dipping their noses, not only over the whole Atlantic, but close in upon the shores. They are very valuable on account of their oil; but no good plan to capture them has ever been discovered. Porpus fishing is therefore almost exclusively carried on by the native Indians, who display much patience and skill in this employment. Two of them enter a light bark canoe, and even when the waves are running high, they will paddle out several miles from the shore. The foremast man is ever ready with his gun, and as the nose of the porpus appears above the water, he fires. The man in the stern then paddles with all his might to reach the animal, for if quite killed, it sinks immediately.—

If the shot were successful the porpoise is carefully handed into one of the narrow ends of the canoe. As this animal only shews his head above water for an instant, the sportsman who shoots him has something to boast of.* About 1500 gallons of porpus oil are annually collected at Digby Gut, by a party of Indians from Annapolis and Bear River.

WHALE.—Whales are seen in considerable numbers, especially in the Bay of Fundy; but they are very shy, and heretofore have baffled the skill of the most expert whalers. It is said they run ashore to die, and occasionally a whale is found stranded on the flats left dry at low water.

DOG FISH are sometimes very numerous in the summer season; they afford excellent oil, and their skins are used by cabinet-makers to polish furniture.

SKATE.—This disagreeable fish, with wings like a bat, is taken during the whole of the fishing season, but it is neither eaten nor cured. It annoys the fisherman, by seizing the bait, and giving him the trouble to haul up and disgorge the hook. I am not aware that this fish has been salted or cured for food.

STURGEON.—Sturgeons enter the Annapolis and other rivers, and frequently injure nets. This fish, accounted by many on the banks of the Hudson and elsewhere a dainty, is seldom caught, or eaten in Nova-Scotia.

SALMON.—In no part of the world are salmon to be

* The author once accompanied an old Indian in quest of Porpus, and although not a bad one among woodcock and snipe, he missed several shots at these animals. He finally handed the gun to the Micmac, who soon laid his game in the bottom of the canoe, stating very leisurely that "Porpus know Englishman, and when he see em he make bow very quick, and say bang away mister, porpus not all the same one turkey."

had of finer flavor than in Nova-Scotia. In May they begin to visit the rivers and ascend the principal streams to the lakes. But no sooner do they appear, than they are threatened with every kind of death.—Nets are spread at the river mouths to strangle them, or the salmon is brought from his element by the sweep seine. The native Micmac lights his toreh, which at midnight renders the fish partially blind, and pursues him along the rippling river, with spear in hand; while the followers of old Isaac Walton throw the deceitful fly upon the surface of the water, to allure him from his lurking place, and make him a prize. Gold river, in the county of Lunenburg, has been celebrated for the sport it affords the angler; but it is inferior to Barrington river, which is now annually visited by gentlemen from the United States, who kill numbers of salmon during their season. The Gaspereau, Maccan, and River Philip offer similar, but inferior temptations, to those who are fond of this kind of amusement.

The erection of dams for water mills, across the rives has proved almost fatal to the river fisheries, and the dust that falls from the saw mills is supposed to be injurious to salmon and alewives. In numerous instances free passages for the fish might have been opened, or the water directed over inclined planes, by which they could ascend to the lakes to deposit their ova: of late this precaution it better observed; but the passages for fish in many streams are obstructed altogether.

SALMON TROUT, and common trout are generally abundant in all the lakes and streams, and may be taken at almost every season of the year. In moderate days in winter, holes are cut in the ice, and they

are drawn out in considerable numbers. Fine trout are sold in the Halifax market during the coldest weather, and from being frozen, they rattle like bundles of sticks.

TOGUE, or *Salmo Huco*—Common in the large lakes of New Brunswick, and Canada, have only been observed in lake Rosignol in the county of Liverpool.

MENHADEN.—This fish, which resembles a young shad, is sometimes taken in nets and wares. It is quite palatable; but in general lean. I have seen large shoals of this fish close in upon the rocks of the shores in calm weather.

SHAD.—This is one of the finest fishes the country affords, and is often taken in great quantities. I have remarked that on muddy bottoms they are fat, and to the contrary in gravelly rivers and estuaries they are lean. The shad taken in St. Mary's Bay, and the rivers of Minas and Chignecto Bays are remarkably fine; while those taken at St. John and along the Atlantic seaboard, are meagre. At the former places, either fresh or salted, they vie with salmon, and always command a high price.

They usually appear by the middle of June, and continue till the latter part of August. The fishermen suppose that there are two varieties of the shad, the "blue backs" and the "round heads." They are frequently accompanied by the menhaden.

HERRING.*—Although only one kind of herring has been described, there are probably three or four varieties of this valuable fish upon the coasts of the province. Early in the spring, a fat herring, 15 inches in length, is taken on the shores of the Bay of Fundy and around the coasts; but after it has spawned it gets

* From the German Herr, an army.

lean. A smaller kind soon arrives, and continues through the summer. In the autumn the spring visitants reappear in fine condition. The herring taken in the rivers of Cornwallis during the summer are much smaller; but very palatable. This is the variety that enters Digby Strait and Annapolis Basin, where they are taken abundantly in wares, and supply the well known article of export called Digby herring, or "Digby chickens." A large herring taken at Grand Manan resembles the Labrador herring. Changes in the appearance and quality of the fish are observed on all the shores, and their value depends much upon the season in which they are taken. The herring is said to be the poor man's fish; they are abundant and readily taken. They are a valuable article of export, and the best kinds of them, when properly cured, are not inferior to mackerel or shad. The number of eggs in the roe of a herring is 36,960.*

ALEWIVES, GASPERSAU, OR KIACKS OF THE INDIANS. Alewives are very numerous in a number of the rivers from the 20th of May to the 25th of June, about the latter period they begin to return from the inland lakes to the sea, and having spawned, they become very meagre. Like the shad, their qualities are much affected by the nature of the rivers where they feed.—The finest alewives are caught in the Gaspereau river of Kings County. They are taken in a variety of ways, and when they are properly salted, or smoked, they are a rich and very palatable fish. The harbour and river of Barrington alone have yielded 2,000 barrels of alewives in a single season; they are taken at the mouth of the latter by hand, or scoop-nets, and sometimes a hundred men, among whom is a sprink-

* Philosophical Transactions.

ling of Indians, are engaged in taking the "kiacks" from the stream. The gaspereau taken in the rivers of the Bay of Fundy, and its terminating basins, are chiefly used for local consumption.

COMMON COD.—This valuable fish, which has long been a staple article of commerce, may be taken on all the banks, coasts, bays, and deep inlets of the province; and in greater or less quantities at all seasons of the year. Small cargoes of frozen codfish are seen during the winter in the market of St. John. They are taken near Grand Manan. They are most numerous in waters from ten to forty fathoms deep; yet in the spring season they pursue the herring into shallow water, and even in the depth of winter they are taken upon hooks set upon the shore. During the summer they are most numerous upon the banks, although some of them always remain to feed close in upon the land. The roe of a single cod is capable of producing 3,686,760 fish.

The Bay of Fundy was an excellent cod fishery until it was intruded upon by foreigners, who throw their offal overboard, greatly to the injury of the finny tribes. During the last ten years there has not been a fishing establishment of any consequence upon its borders, and a few boats only are employed by farmers, who catch for their own domestic uses. Nine-tenths of all the fish consumed in the surrounding counties are brought from St. John and Halifax. Still the Americans fish in the bay with success. During the past season codfish have been more than usually plenty, and should the fishery be protected, it bids fair to be profitable. The shore cod fisheries along the Atlantic coast, Canseau, and the Gulph of St. Lawrence, have also declined, from causes already adverted to, and

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their success will in future depend upon the protection against the encroachments of the Americans. The most profitable fishing for cod, at present, is on the banks and shoals, and in deep sea.

ROCK AND SHOAL COD.—These varieties frequent the rocks and shoals. The former is fond of fields of sea weeds where it feeds upon crabs and other crustacea. Both kinds are commonly pickled.

HAKE are generally taken with codfish, and occasionally in considerable numbers.

TOM COD AND FROST FISH inhabit the rivers to the extremity of the tide flow, and like the trout, they are valuable to immigrants and new settlers.

CUSK.—This very delicious fish is taken in the coldest weather of winter, chiefly upon set-hooks.

HADDOCK.—Haddock are more numerous than they were in former years. As soon as the run of codfish has passed, they are frequently plenty. The haddock of the Bay of Fundy are inferior to those of the Bay Chaleur.

POLLOCK.—This strong and active fish frequents the rapid tide waters and eddies, in shoals, where it feeds upon the small fry, and shrimps. It is taken in considerable numbers, and when dried, is sold with haddock and hake, as scale fish.

FLOUNDERS, or flat-fish, as they are called, are very numerous in almost all the river mouths and estuaries. They are readily taken with hooks, and by many considered very delicious food.

HALIBUT.—The halibut attains an enormous size in the Bay of Fundy, where several have been taken weighing half a ton each, and upwards. They have favourite places of resort, but are generally taken with cod and haddock. They are sometimes very vexa-

tious to the fishermen, seizing all their baits, entangling their lines, and thereby creating unprofitable delays, when cod are plenty. The flesh is sometimes salted, and the fins, when properly smoked, are as rich as bacon. Like the cod, they are very voracious.*

COMMON EEL.—Eels also are generally plenty in many of the rivers, and they are sometimes taken and salted for winter consumption. They are speared at all seasons of the year by the Micmacs, who in times of scarcity find them a relief to their necessities.

BASSE.—This excellent fish is taken during the summer season, and is frequently found in the herring and shad wares, or caught in the sweep seines. It is generally eaten while fresh, and seldom salted for exportation.

MACKEREL.—Of all the varieties of mackerel, it is only necessary to notice the common kind: and there are doubts whether the spring and fall mackerel are not the same, changed in their appearance by their food and the temperature of the ocean. No sea has ever been found that has not some variety of the *scomberoidæ*. The elegance of its form, beauty of colors, and value for food, are almost unrivalled. The mackerel is gregarious, but evidently not migratory. During the winter season he retreats to the deep waters, or those warmed by the Gulf stream; but when the salmon begin to ascend the rivers, and other fish to

* Five lines, with their leads and hooks attached, were carried away from the crew of a fishing-boat at Cape Blowmidon, a few years ago. The day after this occurrence, the same crew hooked a large halibut near Cape D'Or, thirty miles farther down the bay. The halibut had all the hooks and leads hanging to his jaws they had lost the day before. A jackknife and a pair of silver sleeve buttons, were taken from the maw of a codfish, at Black Rock, that had dropped overboard from the pocket of a fisherman, 30 miles from that place, two days previous. Many similar instances of this kind are upon record.

approach the shores, he seeks the shallow waters in quest of food. Mackerel are sometimes taken early in the spring and during the summer. They are seen upon the coasts and in the bays, in immense shoals.—It is not until sometime after the spawning season, and the latter part of September, that they become fat. The August mackerel are inferior, and the later in the autumn they are caught, the greater is their value. They sometimes rush into the harbours in great shoals, and are swept from the ocean by seines.—They usually pay Halifax an annual visit, and are captured off the wharves by angling.

Off Prince Edward's Island, in August, 1846, I saw numerous shoals of mackerel, some of which were several miles in extent. They were so abundant that some of the American vessels obtained their cargoes in two days. They are also plenty along the whole Atlantic side of the province, around Cape Breton, at Canseau, and in the Bay of Fundy. The best catches are usually made in the Gulph of St. Lawrence, off the shores of Cape Breton, and the above island, and especially at Canseau, where the quantity of fish has been so great at times as to obstruct navigation.

The mackerel spawns in the warmest part of the season. The spawn is soon hatched, and in the space of two months the young fry are said to grow to the length of four inches. They are wonderfully prolific, a single roe producing half a million; it is therefore not surprising that they are so numerous. It is only remarkable that so few of them are taken by our fishermen.

CAPELING.—This small fish may be taken in great numbers on the shores of the Gulph. It is chiefly employed for bait.

SMELT.—This pretty little fish, which closely resembles the capeling, may be taken at many places during the winter. It is the first spring visitor to the rivers, and affords a delicious treat to many of the inhabitants. Both the capeling and the smelt are taken in great numbers on the northern side of New Brunswick, where they are applied to the soil for manure. The practice of manuring land with fish is certainly reprehensible.

The **SQUID**, abundant and very valuable for bait in Newfoundland, is rare in the Bay of Fundy.

In this brief account of the fishes, only such have been noticed as form a part of the resources of the province. Of the shellfish and *crustacea*, there are several kinds employed for food. They are lobsters, oysters, clams, cockles, razor-fish, pectens or scallops, and shrimps. A large *mytilus*, or muscle, is used for cod-fish bait.

The system of fishing must necessarily vary in different countries and situations. The various arts employed by the Americans, and the inhabitants of Nova-Scotia, do not always correspond with those practised in Great Britain. In Nova-Scotia success is anticipated from the abundance of fish, rather than from the skill of the fishermen. The modes of fishing also vary in different parts of the province. In the Bay of Fundy and its terminating basins, where the tides rise from forty to seventy feet, a system is pursued different from that practiced at other places, where the sea attains less periodical elevation. The shore fishery is almost exclusively in the hands of farmers, or persons whose chief dependance is upon the productions of the soil and forest. Fishing is not a distinct employment, and the whole quantity of fish taken is insufficient for

the local supply. The vessels engaged in this employment, that enter the bay, are almost all owned at Deer Island, and other islands in Passamaquoddy Bay ; or they are American bottoms, from the United States. As soon as the ice disappears in the spring, the herring strike in, and a few are taken in shore nets. The usual mode is to drive down piles, or stakes, into the beach, and form semicircular enclosures, by interlacing them with small brushwood. This erection, called a ware, is covered by the tide at high water. When the tide recedes, the fish are left impounded and dry. The most favorable time for a catch of herring is when the tide is withdrawn in the evening. These wares are frequently broken down by gales of wind ; by substituting a net, which may be disengaged from the stakes at pleasure, this inconvenience may be remedied. Nets are frequently used in this way at St. John, and with great success in the catching of alewives and herring. The fishing farmer is seldom or never prepared either with salt or casks, and it frequently happens that after watching night after night, he is suddenly surprised by an immense "haul" of fish. In some wares twenty or thirty cart-loads, as they are called, are sometimes thus captured, and all neighbours around drive their carts into the ware, at low water, and obtain a temporary supply. More frequently, hundreds of barrels of herring are left to be washed away, or they are lost for the want of salt. Cod, haddock, and pollock are sometime captured in these cheap and rude enclosures, where bait is usually obtained by the cod fishermen. Thousands of barrels of the finest herring are thus annually lost. They soon become putrid, and evidently injure the fisheries.

Shad are also taken in similar wares, erected at the

months of the muddy rivers and creeks, in June and July ; with them are frequently found salmon, basse, herrings, sharks, dogfish, and other fish of prey. At Five Islands in Minas Basin, there is a natural ware formed in a circular basin of the rock. A thousand cod, besides other kind of fish, have been imprisoned during a single tide in this extraordinary pond, and carted thence by the inhabitants at low water. At Scots' Bay an immense seine is employed, and a thousand barrels of shad are taken annually. At the Habitant river in Cornwallis a seine is stretched across the stream at low water, and sprung at high water, at once cutting off the retreat of all the fish above ; from 1000 to 10,000 shad are sometimes taken at a single "spring." 100 dressed shad fill a barrel. From this destructive system of the females in the spawning season, the fishery is on the decline. They are also taken in wares and seines at the mouth of the Cornwallis river. In the Shubenacadie and the Avon, and the rivers of Cumberland, drift, or gill nets are used, 2000 barrels of shad are taken annually by drifting in the rapid tides of the Peticodiac. Of late, large nets have been trailed in Minas Basin, and with good success. This practice is much complained of by the river fishermen. Basse and flounders are sometimes caught with baited hooks. Gill nets are set for salmon, and they are speared at night by the Indians. Gaspereau are secured by scoops or square nets attached to long levers. The scoop is also employed for smelts.

In every branch of this kind of employment, improvidence, negligence, wastefulness, and lack of preparation, are always manifest. The herring fishery of the Bay of Fundy is capable of supplying the in-

habitants, and of affording a staple article of export ; yet the persons who are actually engaged in it, and who capture thousands of barrels during the spring, are almost the first to apply to the country dealer during the winter, for a supply of the very article they had failed to secure, when Providence had laid it at their doors. Of the exceptions to this remark, one should be made in favor of Bass Creek, in Cornwallis, where a few individuals, besides supplying the country around with fresh herring, pickle and smoke them for the Halifax market.

Shallops from the eastern States, and the western ports of New Brunswick, well equipped, will frequently ascend the bay, purchase a few " hauls " of a ware, and with their nets and lines collect a cargo of herring and cod in the space of a few days. The lack of success by the inhabitants, has been ascribed to their varied employments, of fishing, farming, and lumbering, as they are combined by the shore settler. But in a new and thinly populated country, where there are few individuals of any capital, and the relief of immediate want is paramount to every other consideration, there is no remedy for practices rendered unprofitable by necessity. It is maintained by the steady farmer, that these fisheries are of no value to the country, and a stranger, were he to judge by the comforts enjoyed by the shoreman, would be led to the same conclusion.

At certain periods in the spring and early part of summer, cod, haddock, pollock, and halibut, are also abundant in the bay ; at many places boats may be loaded two or three times a day, yet upon the whole of the shores, there is not one complete fishing establishment, and the fishing of the bay is enjoyed by the

Americans. Of the shoals of mackerel that appear in the summer and autumn, few are taken, except at Grand Manan, around which island the craft of the United States are constantly hovering during the whole of the fishing season. Why are not those marine resources improved by the inhabitants of Nova-Scotia? How is it that they are made profitable to foreigners, while they are almost valueless to the people who live upon their borders? These queries have already been replied to. When fishing and agriculture are followed conjointly, they have both proved unprofitable. All the energies of the American fishermen are devoted to his business, and he is stimulated by a high bounty. The shoreman of the bay views the treasures of its waters as something to be applied to only in time of need, for which he is unprepared.

There cannot be any doubt of the success that would attend the establishment of fishing stations at different places on these shores. No single station would require any great outlay of capital. Three or four good boats, and two shallops, with twelve men, two of whom should be coopers, and a good supply of salt, casks, and tackle, might at first be employed.—In April wares may be put down for herring. In May set nets and sweep seines may be used, and the boats sent out on every slack tide. The shallops may visit the deeper waters, in summer make trips to the outer banks; and in the autumn follow the mackerel. In the winter, and after the produce of the season has been secured, the men may be occupied in procuring staves, making barrels, collecting materials for wares, &c.; therein furnishing constant employment. Thus the marine resources now taken away by

foreigners, might be improved and rendered subservient to the wants and general improvement of the country.

The Annapolis and Digby Basins are celebrated for the abundance and excellent quality of their herring. From 1783 to 1820, the annual export of herring from those places was upwards of 80,000 boxes.— Since the latter period the fish have been less numerous although they still form an important export.

The first run, which commences in April, are in general lean. They are usually taken in nets and sold fresh or pickled. They are succeeded by a smaller variety which are taken in wares upon the shores and islands. Having been thrown into pickle as soon as possible after they have been taken, they are smoked in houses built for the purpose, and finally packed in boxes containing about half a bushel each. The price of a box is from 2s. 6d. to 4s. each. A young fry comes in during the summer, when the wares are opened for their escape. The herring sometimes continue until the approach of winter, and it is stated by Mr. Haliburton, that in 1796, 200 barrels were frozen into a dense mass in one of the wares. This fishery has not declined so rapidly as might have been expected, and under proper regulations it may be preserved for a long period to come. It has been supposed by some, that the porpoise shooting practiced by the Indians at Digby Gut, injures this valuable fishery. From a series of observations made on the coast of Scotland, it does appear that the presence of steam, or other vessels, or even the discharge of cannon, prevents herring from returning to their haunts. Their occasional scarcity may more justly be ascribed to their wandering and capricious habits, the destruction of their ova and other causes.

Salmon are scooped out of Allen's River, Bear River, and other streams falling into the basins.—Smelts are also numerous in their season. Few improvements perhaps remain to be made in the system of fishing at these places. The most desirable object is to prevent the fishery from falling off by improper practices. A number of vessels belonging to Digby are annually employed in the mackerel fishery. The method of capturing porpus at the Strait has been already noticed.

Grand and Petite Passages have long been good fishing establishments. During the spring the shores abound in the larger variety of herring ; and the offing with cod, pollock, and haddock. The former passage affords a fine harbour. The fishery of Bear Island supports a considerable population, and has heretofore maintained a regular trade with the West India Islands. Cod, cusk, and other fish are obtained at every season of the year. At the head of St. Mary's Bay, the water becomes shallow and muddy, finally terminating in an extensive marsh. This is a favorite resort of shad, which are taken in the usual manner : they are superior in quality. The fishery of the Sissiboo River has fallen off latterly ; still the finny tribes frequent the whole shore, and in sufficient numbers to supply the inhabitants, and a surplus for exportation. These remarks will also apply to the coves and inlets between Cape St. Mary's and Yarmouth.

The situation of Yarmouth is peculiarly favorable for the cod and mackerel fisheries, as well as for foreign trade ; and the surrounding country has latterly displayed its agricultural capabilities. The result has been general improvement, and the rapid growth of a commercial town. Nor have the maritime resources

of the country been altogether neglected, as will appear by its exports. But the operations of the bounty upon American vessels, give the citizens of the United States a great advantage over the unaided enterprize of Nova-Scotia.

From Yarmouth, following the direction of the coast, to Cape Sable and Barrington, the shore is indented by a number of estuaries and rivers, and studded with islands, of which the Tusquets alone are said to exceed three hundred in number. All the rivers terminate in lakes, to which the salmon and alewives ascend to spawn. The coast meets the sea with a low border of marsh, and the sea bottom is most favorable to the production of the *molusks*, *crustacea* and other animals upon which the larger fish subsist. I observed upon these shores that small *crustacea* and marine insects were extremely numerous; and in June the waters teem with the young fry of different finny races. The rivers abound in trout, and are frequented by salmon and alewives,

The principal harbours are Jebogue, Tusket, Abup-tic, Pubnico, and Coquequit. The islands also afford safe and commodious anchorage. The inhabitants of the Acadian settlements at Eel Brook and Pubnico, and those of British extraction, secure great numbers of alewives and herrings. Boats and small vessels are also sent out for cod and mackerel. Eel Brook has always been remarkable for its eels, upon which the Acadians and Indians subsisted in the early settlement of the country. It would be difficult to estimate the quantity of fish taken upon these shores, for more or less of the catch is reserved for the use of every family. Although, perhaps, well adapted to meet the local demand, the whole system of fishing is imperfect, and

is almost in every instance combined with farming and other pursuits.

Barrington was originally settled by about eighty families from Cape Cod, who deemed the port a favorable situation whence to prosecute the whale fishery. They were, however, disappointed, and returned to Massachusetts. Afterwards new settlements gradually sprung up, on account of the cod fishery. At one time the whole population was engaged in fishing, and the annual catch exceeded 22,000 quintals, besides pickled fish. There are upwards of fifty vessels now engaged in the deep sea fisheries, and a fleet of boats is employed on the shores. The different varieties of fish are abundant. 2,000 barrels of alewives are annually salted at the mouth of the river, where they are taken in scoop-nets. Shoals of herring also frequent the outer shores. The rivers of Shelburne, and Liverpool counties also abound in these fish, and with them the LeHave affords codfish, sturgeon, halibut, and shad. The fishmarket of Halifax is unrivalled, and affords its dainties in the severest cold of winter, besides sending supplies to New York and Boston by the Atlantic steamers, and the American packets. Frozen fish are also shipped from other ports. Salmon are purchased at Medway, LaHave, and Gold rivers, and being packed in ice, are sent to the United States, where they command high prices.

It will be unnecessary to enter upon any very detailed account of the fisheries along the Atlantic side of Nova-Scotia. From the description of the coast already given, it will be seen that the great number of harbours, bays, and rivers, that indent the shore, afford all the shelter and accommodation that could be desired. The same indents that render the

prosecution of the fisheries safe and easy, offer to the finny tribes most extensive fields for feeding, and proper sites for the vivification of their ova. Early in April the herring and other gregarious tribes rush in from the Atlantic towards the shores in dense shoals. Cod, haddock, and pollock, follow them, and feed upon the flanks of the advancing armies. Dogfish, sharks, and other fish of prey, also prowl around the coming legions. It is not till the harmless tribes enter the smaller estuaries and rivers that they obtain respite from their voracious enemies.

In June the salmon and alewives ascend the streams, leaping from fall to fall, until they gain their interior retreats. During the whole season the fish used for food are assailed in front by every device that man can invent for their capture, and their rear is attacked by the hungry tribes of the deep; but to withstand this threatened annihilation Providence has provided them with wonderful powers of procreation, and were the shores and rivers left free from the impediments that check their spawning, their numbers would remain undiminished.

The mackerel also scarcely wait until the sea is warmed by summer heat; but sport in millions at the ocean's surface. Fattened by the exuviae of the shores, in autumn this beautiful fish offers to fill up the stores of food required by the poor. Nature's last bounty of the season is the best. Even during the coldest days of winter, the shoreman can dine upon some cheap luxury taken from the water. The regular order in which kind succeeds kind, at almost every period of the year, displays in terms that cannot be misunderstood the beauty and harmony of nature's

laws, and above all the bounty of a beneficent creator in providing for the wants of man.

In no part of the world, are the fish used for food so varied in kind, and abundant in quantity, as on the coasts and among the islands between the Bay of Fundy and the coast of Labrador. This range embraces their favourite latitudes, and it is probable that the Gulph stream which runs along this part of the American continent, and to which the great Banks of Newfoundland owe their origin, is adapted to their habits, and by raising the temperature of the sea, affords them proper retreats after their season of spawning is over. The doctrine of the migration of fishes is now exploded. Those submarine fields and the banks stretched along the northern border of the Mexican stream, are the great victualling offices of the world, and they have long been objects of contention between different nations. Of all these vast resources, all that is claimed by Nova-Scotia belongs to her territory, and her inhabitants only seek their national rights.

By the custom house returns for the commercial towns of Barrington, Shelburne, Liverpool, Lunenburg, and Halifax, the imports and exports of fish are correctly arrived at: but these chiefly relate to the surplus produce. The whole quantity taken cannot be ascertained without taking a census of the fishing population, and the quantity consumed by each family. The intermediate shores between those towns, and between Halifax and Canseau, are but thinly populated. Long lines of coasts and bays are still uninhabited. The fisheries of this part of the province would support a population ten times greater than the present; and the exports of a staple article of com-

merce might be increased five fold. The soil, generally rocky and forbidding, will not afford bread ; but it will supply the vegetables required by the fisherman. I have observed that the fisheries are prosecuted more advantageously upon those partially barren shores, than in more fertile districts : a proof that fishing and farming combined are not profitable. This will ever be the condition of these employments in Nova-Scotia, where the proper season for planting is that in which the inhabitants of the sea are most abundant.

It has often been inquired why are not these fisheries more productive ? Why so little advancement in the condition of the people engaged in them, so great a lack of bread, and often the ordinary comforts of humble life, among a people who have the elements of wealth and independence within their reach. Again we must advert to the general state of the province, and again to the bounties given by foreigners to their citizens, who fish upon these coasts, and the operations of which are shackles to our industry, drawing away from us our hardy and well-trained shoremen, who, were they retained, would fill our navy with active seamen.

The ordinary means are employed for taking salmon and alewives ; herring are secured in nets, and occasionally by sweep seines, which sometimes land immense "hauls." The tides are not sufficiently elevated for the use of wares. The cod fishery is pursued in boats near the shores, and in small craft on the banks. So abundant are the fish, that the lading of 10,000 vessels at certain periods would produce little apparent diminution in their numbers.

It may be said on the part of the Provincial fishermen, that there is no lack of intrepidity and endurance while they are engaged in their employment. If there be any defects in their habits they will be seen in their inability to find constant employment, and a reckless extravagance when their labors are successful. Many of the vessels are badly fitted out ; their boats also are not always in good order, and their fishing gear is frequently scanty and imperfect. The establishment of well supplied stations would remedy some of those evils, and a bounty on their labors would materially improve their habits—greatly add to the catch, and in its ultimate effects increase the revenue of the Province.

More than ordinary notice may be taken of Chedabucto Bay, Canseau, and the adjacent waters. The harbors of this valuable part of the Province have already been described, and their fisheries exceed any in the world. Formerly there were great contentions among the inhabitants of this quarter respecting the rights of fishery. These difficulties have in some degree subsided ; still it is not uncommon, when a large haul has been made by a sweep, for persons who have no share in a seine, to rush into the water amidst the general confusion, and carry off from the catch as fast as possible. The great abundance of fish is the only preventive of very serious riots. A further introduction of judicious regulations would be to the interest of all concerned.

Herring arrive early, and continue during the summer and autumn. They are of an excellent quality at all seasons. Cod, pollock haddock, &c., are caught early in the season close to the shores, and even in Milford Haven, the beautiful basin of Guysboro' ; but

the shoals of mackarel exceed anything of the kind that has ever been observed in the seas of other countries. It appears that in the latter part of May and in June they advance from the Atlantic towards the Gulf of St. Lawrence. Having their progress arrested by the island of Cape Breton, they seek a passage through the Gut of Canseau, crowding themselves upon the adjacent shores, and filling the harbours, bays and inlets in every direction. At this period they are not to be seen on the north side of the island; but the inlets between White Haven and Cape Canseau, Chedabucto Bay, and the southern side of Cape Breton, have them in immense shoals. By the middle of August they appear in the remotest parts of the Gulph, and in great abundance on the northern coast of Prince Edward Island, around the Magdalen Islands, Miscou, Shippegan, Gaspé, and Bay Chaleur. The best fishing extends from the middle of August to the first of December. By the middle of September the fish are large and in admirable condition. At the above places, and more especially at Chedabucto Bay, Canseau, &c., it is impossible to conceive the extent of their armies; shoals are seen from two to five miles in diameter, and so closely crowded that the sea is rendered smooth. I have seen them overturned by the bows of vessels while sailing in a good breeze; and the passage of boats and small craft is sometimes obstructed by living masses of fish. Vessels have been laden with mackarel from one of these shoals in three or four days.

This harvest of the fisherman returns annually, and seldom fails in yielding its bounties. At Guysboro', Crow Harbour, Canseau, and other places, they

are taken by large sweep seines, which are managed to cut off their retreat and press them toward the shore. During the fishing seasons the coast is resorted to by merchants' clerks, small traders and fishermen from every part of the province, who afford supplies in barter for fish. A successful sweep produces an interesting and very amusing scene. The shores are lined by thousands of the inhabitants and visitors, and no sooner has the seine performed its task in surrounding a body of mackarel, then a general tumult ensues—all hands are engaged in scooping and catching the prize, and the shore is soon covered with dying fish, which are sold fresh and cured upon the spot for the markets. 1,000 barrels of mackarel have been taken at a single draught of a seine—2000 barrels have been laid upon the strand in a single night. In one night in October, 1834, 3,320 barrels were secured.

The fish do not invariably frequent the same spot from year to year. Some years ago they withdrew from Fox Island, where 20,000 barrels had previously been taken annually. The excellent station of Crow Harbour has also been subject to their capricious habits. Although this change of quarters is inconvenient for the fishermen and inhabitants, the shoals are sure to fall upon the shore at some points, and it does not appear that their number, or the frequency of their visits, has been diminished.

It has been computed that the fisheries extending eastward from Canseau, including the Island of Cape Breton, employs 5,000 operative fishermen, 120 shallops, and 1700 boats. The number of nets is 10,000. In 1839 the exports of mackarel from the port of Halifax was 19,127 barrels, which in 1841 had increased

to 35,917, and in 1842 to 54,158—an increase over 1839 of 35,031 barrels. The increase has been ascribed to the protection of the fisheries against the Americans by the employment of revenue cutters.*

Pomket and Antigonish, with St. George's Bay, have valuable fisheries; Merigomish, Pictou, Carriboo, Tatmagouche, Wallace and Waterford, also have shoals of herring and alewives, and are very favorably situated for prosecuting the cod, mackarel, and seal fisheries of the Gulph, to which a considerable number of vessels are despatched annually. The rivers abound in salmon and trout, and the shores with shell-fish. The attention of the inhabitants has been directed to lumbering, and to the soil, which in this quarter is far superior to the scanty covering of the rocks on the southern side of the Province. The shore fisheries are therefore much neglected, scarcely yielding a supply for home consumption. The coast of Cape Breton is nearly 300 miles in extent. The northern side offers but little shelter for vessels; but its southern, or Atlantic border, abounds in fine harbours and indentations, which render it peculiarly favorable for the visits of the finny broods, and the sites for their capture. The fisheries of this Island were always held in high estimation by the French, who zealously improved them until they yielded up to Great Britain their key to the St. Lawrence. All the harbours and inlets are occupied by the kinds of fish already noticed, and the coasts afford profitable cod and mackarel fishing. Many years have elapsed since the merchants of Jersey established themselves at Arichat and Cheticamp. At present there are fishing stations at almost every port in the Island, and the

*Appendix to the Journals of the House of Assembly, 1843, No. 74.

shore catch has improved by the preventive service of Cutters. Since their employment, at least 150 sail of American vessels which frequented the shores in violation of the treaty, have been withdrawn altogether. Still these fisheries have not increased in late years; and there has been a decline of their productions.

Return of Ships and Fisheries, Cape Breton Island, (Madame included,) for the year ending 31st December, 1844.

SHIPS.			FISHERIES.					
No. of Ships built in the year.	Tons Burthen.	Registered according to Law.	No. of Vessels and Boats employed.			Description and quantity taken.	Value Sterling.	REMARKS.
			Vessels.	Boats.	Men.			
42 Increase of 7	2626 of 500	49 Decrease of 9	205	1139		95,173 quints. { Cod. 5,215 do. Seale 3,575 barrels Mackerel. 3,800 barrels Herring. 470 bbls Salmon 8,997 barrels Pickled Fish. 232 tons Cod and Dog Oil. 7,500 Seal Skins, and 60 tuns Seal Oil	£17,586 10 0 1,303 15 0 6,256 5 0 2,850 0 0 940 0 0 11,246 5 0 5,840 0 0 2,550 0 0	Decrease on 1843, 8720. Decrease on 1843, 1600. Decrease on 1843, 1000 bbl. Decrease on 1843, 3000 bbl. Increase on 143, 100 bbls. Decrease on 1843, 4,200 bbl. Increase, 1 tun. A decrease on the year of 115 tuns Oil, and 10,000 Skins.
							£48,572 16 0	

FISH AND OIL EXPORTED FROM CAPE BRETON DURING
THE YEAR ENDED 5TH JANUARY, 1846.

1845	Dry Fish	Pickled Fish.					Fish Oil.	
	Quintals.	Barrels of Herring	Barrels of Salmon	Barrels of Mackerel	Description not stated—barrels	Smoked Herrings boxes	Casks	Gallons
	15,577	1069	20	23	6937	32	307	270

We may now turn to the mackerel fishery as it is carried on in deep water, or at a distance from the shore. Formerly mackerel were taken by trailing nets; but of late years they are chiefly caught with hooks and jigs upon a plan first practised by the Americans. A quantity of damaged and frequently putrid fish is thrown into a box hopper, in which a cylinder, studded with knives, is made to revolve by a crank. This is called the baitmill, and by it the bait is reduced to a kind of paste called *pohegan*. When the wind, weather, and situation, are favorable, the vessel is laid to under her mainsail, and a quantity of *pohegan* is thrown overboard by the skipper. No sooner is it perceived by the fish than they rise to the surface, greedily seizing the smallest particles, and apparently drinking the oiled water. Every man is supplied with two or three lines. The hook is about the size of that employed in angling for salmon. A piece of pewter is ingeniously cast upon the shank of each hook, and kept bright by scouring; this is called a jig, and in the water resembles the small shrimp, or a kind of sepia upon which this fish feeds. Besides the jigs, there are hooks attached to the ends of small iron

rods, and these to long light poles, or handles. As soon as the mackarel rise, every man exerts himself to the utmost, with the hooks, or jigs, according to circumstances. So long as they keep up, they are rapidly secured. In this way a man will take a barrel in an hour. The fishing will sometimes last twelve hours and longer, without any intermission. The mackarel frequently retreat as suddenly as they appeared, when the fishermen immediately commence cleansing and preserving the catch.

I was once a passenger in an American "mackarel-man" from Eastport to Grand Manan, and saw the above method successfully practised. In the space of an hour the deck, cabin floor, and every part of the vessel was occupied by dead and living fish; and as the captain discovered afterwards two or three of the "tarnal critters" had found their way into his bed—another was in the flour barrel, and others had brushed some of the "tea things" from the shelves of the cook's cupboard. The site of a shoal of mackarel is frequently known by large flights of sea birds that hang over it.

Vessels are fitted out for the mackarel fishery from almost every port in the Province. They generally start from the first of July to the first of August; the latest returns are in the latter part of November, and some of them make two and even three trips during the season. The Americans advance their fleets earlier; they are always prepared to take any kind of fish, and vessels destined for the cod banks sometimes return laden with mackarel, or a mixed cargo. The Provincial vessels are from 30 to 60 tons burthen, and they usually complete a voyage in six weeks. They are generally fitted out on shares, and every man has an interest in the catch.

The number of vessels thus employed, and the quantity of fish taken, can only be inferred from the Custom House returns. It is to be regretted, that of this important branch of industry, with others, there is so great a lack of statistical information. From the success that usually attends this pursuit, many are surprised that it is not more eagerly followed; but the bounty given to American adventurers draws away a part of our sea-going population, from which arises a want of hands to secure the resources that surround the peninsula of Nova Scotia.

Another, and perhaps the most important division of the maritime wealth of this country consists in the bank, or deep sea cod fisheries.

Stretched along the Atlantic side of Nova Scotia, Cape Breton, and Newfoundland, there are numerous tracts of shallow sea, or submarine fields; where the water varies from 16 to 60 fathoms in depth. The bottoms are chiefly sand, shingle, and shells, which some have supposed to rest upon the summits of submarine mountains. As these tracts are annually rising and extending in all directions, and a variety of other facts confirm the opinion, I have been led to believe that they have been raised by the Gulph stream—that mighty current that sweeps along the whole coast, and is finally lost in the central Atlantic. The Isle of Sable—a dangerous shoal to mariners—has been thrown up above the sea surface by the waves and currents. The Gulph of St. Lawrence also has its banks, some of which have evidently had their origin in the outward current of the great Canadian stream—the outlet of vast interior lakes.

The Great Bank of Newfoundland is 600 miles in length and 200 miles wide. The principal western

shoals are Rus's, Whale, Green, Peters, and French banks. Off Nova Scotia there are Sable, Neare, Cape Sable, St. George's, and Dogger Banks. It has been supposed that the ocean covering these vast submarine fields contains as much food for man as an equal extent of dry land under cultivation. For several centuries the nations of Europe have labored indefatigably with nets and lines, and every other invention that can be contrived or imagined, and yet not the slightest diminution of fruitfulness has been observed.*

The cod fisheries of the Banks of Newfoundland are almost exclusively in the possession of the French and Americans, whose vessels anchor in fleets upon the best grounds, and obtain their cargoes without molestation. Of late the number of "bankers" from St. John and other ports in Newfoundland, has been greatly diminished, and a vessel from Nova Scotia or New Brunswick is seldom engaged in those waters. The crews of the few that reach them are insulted, and by superior numbers driven away. It is believed that the French have greatly injured the inshore fisheries, by setting bultows. These are hawsers of moderate size, to which short lines, with hooks, are attached two or three feet apart. The hooks are carefully baited, and the hawser is anchored with buoys in such a manner that it is stretched along the bottom. The hawser is drawn up once or twice every twenty-four hours, and after the load of fish is removed, and the hooks rebaited, it is returned to the bottom of the sea. Some of the largest French vessels carry 10,000 fathoms of bultow line; by these lines they obtain their cargoes, instead of the "hook and line," to which they are restricted by the treaty. The few

* British America, by Hugh McGregor, Esq.

Colonial vessels that frequent the banks of Nova Scotia are generally successful in their catches, but they can never compete with foreigners who are supported by bounties.

There were engaged in the Newfoundland fishery—

In 1578—No. of British vessels, 15.

“ Spanish “ 100.

“ Portuguese, 50.

“ French “ 150.*

From 1765 to 1774 the French had 262 vessels, 1511 boats, 14,953 men, catch 36,505 quintals of dry fish, 3,807 hogsheads of oil.

In 1775 France employed 564 ships, 27,520 men—the catch was 1,149,000 quintals dry fish, 12,465 hogsheads of oil. Total value, £981,692† annually.

From 1820 to 1827 France had 214 vessels, 7,333 men.

In 1826 the whole cod fishery of the French employed 350 ships, 40,016 tons, and 10,199 seamen.

In 1829, 400 ships from 100 to 400 tons burthen, 90 of these were employed off Iceland.‡

In 1829 the Americans employed in these fisheries 1500 vessels, 15,000 men—catch 1,000,000 quintals, 3,000 tuns oil.

In 1831 the produce of the fisheries exported from the United States was in value £425,128 sterling.

In 1832 the number of American vessels was 1800.

In 1847 the French catch was 1,000,000 quintals—the bounties £125,000—number of men 25,000.

In 1847 the Americans employed 2,000 vessels—bounty 20s. per ton—37,500 men—catch 1,500,000 quintals.

In 1847 the British fisheries on the coast (not on the Banks) of Newfoundland, employed 25,000 men—catch 1,000,000 quintals.§

* Seybert and Pitkins' statistics.

† Macpherson.

‡ Bliss' statistics.

§ Morris' Newfoundland.

EXPORTS OF FISH FROM NOVA SCOTIA.

Years.	Vessels.	Tons.	Boats.	Men.	Fish, dry.	Fish, pickled	Fish, smoked	Oil.	Seal Skins.
					Quintals.	Barrels.	Boxes.	Hogshead.	Number.
Average of 1805 } —6 and 7, } Average of 1815 } —16, and 17, }					11,182	25	5,675*		
1832	570	640			152,698	40,205			
1842	250	3,400	10,000		170,455	57,488		111 jars.†	
1843					221,486	88,883	15,571		
1844					237,675	99,996	7,900		
					250,593	79,291	20,756	202,675 galls.	195,96†

* Bliss' statistics. † Young on the rights of fishery. ‡ Official returns.

An account of the quantity of Fish and Fish Oil imported into, and exported from Nova Scotia, during the year ended 5th January, 1846.

1845	Dry Fish.	Pickled Fish.												Fish Oils.				Boxes Smoked Herring's	Boxes Smoked Salmon	
		Quintals.	Herrings.			Mackarel.			Salmon.				Alewives.		Gallons	Barrels	Casks			
			Barrels	Half barrels	Kits	Barrels	Half barrels	Thirds	Kits	Barrels	Half barrels	Thirds	Barrels	Half barrels						
Imported	94,213	9,248			682				4251		173	4139		32,480	271	798	4816	8		
Exported	302,520	23,003	204	238	48,573	1345	607	473	203	7814	336	224	779	15,860	143	131,859	459	1202	25,522	46 *

*Custom House Returns.

The population of Nova Scotia is about 200,000 souls, or 33,333 families of six souls each. I have estimated that each family consumes upon an average one quintal of dry fish, or what is equivalent thereto, annually ; and of fresh and pickled fish, three barrels—making the whole home consumption of dry fish 33,333 quintals, and of pickled fish 100,000 barrels. By this estimate and the annual export, averaged by 1845, the actual catch of the Province yearly will appear very great, yet it has not reached one half of what might be taken without any injury to the fisheries.

The average quantity of fish taken at St. Pierre and Miquelon from 1831 to 1835, inclusive, was 300,000 quintals per annum.

The amount of premiums, drawbacks and bounties, granted in support of the French fisheries in 1835, was £883,000 sterling, or nearly 20,000,000 of francs. Premiums from 100 to 500, and even 1000 francs a man were granted, and the number of fishermen was 6,200. At present the largest bounty granted to a French fisherman does not exceed 150 francs.

In 1845, 104 vessels, 16,750 tons, 2,601 men, baited	
at St. Pierre, and took upon the banks,	208,900 qtls,
Caught in the neighborhood of St. Pierre and Mi-	
quelon,	48,000 "

Total quintals,	256,900
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Of the last mentioned quantity, (48,000 quintals,) nearly one-half was taken on British fishing ground ; and up to 1846 the quantity of bait supplied the French by British fishermen is estimated at 20,000 barrels per annum.

The sums paid for bait at St. Pierre in 1845 were, for herring, £6,950, and caplin, nearly £5,000—*Mr. Oke's Report*

The length of the British fishing ground from the Bay of Fundy to Labrador, has been estimated at 3,000 miles. The principal ports and harbors along this immense line of coast may be said to be inhabited by an Anglo-Saxon race. All the varieties of fish approach their dwellings, and the richest banks are not far off; yet foreign powers, from one to three thousand miles away, reap the richest harvests from these sources of wealth and national greatness. They train their seamen in the waters of British America, and are always prepared to fill their navies with experienced pilots to our bays and harbors. To remedy evils at once so depressing to our industry and dangerous to our liberties, a strict observance of treaties, a well regulated trade, and an equalization of bounties, are all that are necessary.

CHAPTER VI.

Agriculture of Nova Scotia, climate, temperature—Comparative time of the flowering of plants—Origin of the soils—Kinds and qualities of the soils—Manures, animal, vegetable, and mineral—Lime—Gypsum—Wild Lands—Table of granted and ungranted Lands—Clearing—Crops—Grain—Vegetables—The potato—Leguminous plants—Horticulture—Agriculture—Expenses and profits of crops;—Labor—Markets—Farm Stock—Dairy Husbandry—General remarks.

CLIMATE.—That kind of industry which unites itself with the operations of nature to produce food, must ever be of the first importance to the world. It was the first employment given by the Creator to man, and by its moral tendency, the field it opens for the expansion of science, and the materials it supplies to the necessities of our race, it will ever keep in the foremost and most honorable ranks of all human occupations.

The success of agriculture will always depend more or less upon climate. To understand its operations, and to select the plants best adapted to its peculiarities, is of the highest importance. From the first discovery of Nova Scotia up to the present time, there has been a lack of meteorological observation. The barometrical records that have been kept have not been compared and practically applied. From this cause, and the gloomy appearance of the Atlantic shore—a part of which is wrapt in drizzling fogs during the spring, the climate has been unsparingly condemned by

strangers and hasty visitors, who never breathed the serene atmosphere of the interior, nor noted the rapidity of its vegetation.

Humbolt has justly remarked, that the climate of Europe is not to be regarded as a type of the temperature of other countries under the same latitudes. Central Europe was formerly considered the type for all corresponding latitudes, but it has proved to be a variation from the general rule. Isothermal lines make extraordinary deviations. Climates are much influenced by the relative quantities of land and water, the positions of continents and islands, currents of the sea, altitude, longitude, winds, &c., to which may be added the condition of the earth's surface in reference to conducting and radiating heat. Places in the same latitude in Europe and America have been found to have a mean difference of temperature from 11° to 16° Fahr. Edinburgh is 9° further north than Quebec, yet its mean annual heat is 6° higher than that of the latter place. The chief cause of the greater intensity of the cold in North America is the great tract of land which unites it with the frigid expanse of the polar circle, upon which there are lofty mountains covered by perpetual snows; hence the winds that sweep over these icy regions are intensely cold. Evaporation is a cooling process. The increased power of the sun does not even in the last of February warm the air, and the old American adage of

“As the days begin to lengthen”

“The cold begins to strengthen”

is really true. But Europe is separated from the polar circle by the arctic ocean, which preserves a medium temperature, and moderates the extremes of heat and cold. The burning sands of Africa, a northern sea,

and a vast surface of cleared and cultivated land, elevate the medium and check the extremes of temperature in the old world. It is, therefore, as Humbolt says:—"We find at New York the summer of Rome and the winter of Copenhagen; at Quebec, the summer of Paris and the winter of Petersburg."

Among the causes that influence the mean annual temperature of North America, and especially that of Nova Scotia and the islands at the mouth and in the Gulph of St. Lawrence, are the vast accumulations of ice in high latitudes, and the currents that flow in from the equatorial and polar regions, meeting each other upon the coasts. Northward of Baffin's Bay, glaciers stretch out from the shore, and mountain masses of ice float out into the ocean.* In the spring, and beginning of summer, a part of the North Atlantic is occupied by icebergs, which, in melting, not only cool the ocean, but lower the temperature of the atmosphere, and fill it with aqueous vapour. The east and north-east winds in Nova Scotia are, therefore, very chilly, and bring along with them rain or snow. A southeaster also brings rain, hail, or snow, and generally blows furiously three days before it subsides, and the wind settles in the northwest.

The effects of the Gulph stream on the climate of the Atlantic coast of America are very manifest. This powerful current springing under the tropic, and rushing from the Gulph of Mexico through the Straits of Bahama runs in a northeasterly direction along the American coast, washing the Great Bank of Newfoundland, and after flowing upwards of 3000 miles, finally reaches the Azores, and even the Bay of Biscay. The

* Scoresby's Arctic Regions, vol. I., p. 206.

temperature of the water of this current is 8° above that of the surrounding sea at the Great Bank, and 5° above the temperature of the sea at the Azores. Rennel estimates the area of the current and the tract that receives it, at 2000 miles in length and 350 in breadth: both are marked by *sargossa*, or the sea weed, well known to Mariners. By this cauldron of warm water, the icebergs from the north are dissolved—the surrounding waters and superincumbent atmospheres are warmed, and the temperature of the bordering continent elevated. A proper retreat is also afforded for the various kinds of fish after their season of spawning has passed, and while the severity of the frost drives them from the shores. Such are some of the facts displayed in the economy of nature in this quarter of the world.

From the cause just alluded to, the south wind in Nova Scotia is warm at all seasons of the year. In the depth of winter, when the whole surface of the earth is covered with snow and ice, and universal frigidity prevails,—when the trees of the forest are cracking and splitting, and all the rivers and lakes are sealed up by the intensity of the frost, no sooner does the south wind blow than the whole scene is softened—the air becomes warm and mellow, and there is a thaw. The atmosphere brought over the land from the south being loaded with vapor by the rapid evaporation of the warm sea surface, frequently brings rain, and the condensation carried on by the cooler land surface along the coast in the spring produces fogs. The air over the interior lands soon acquire the temperature necessary to dispel these fogs, and therefore while some of the shores are obscured by them, the inland districts enjoy a clear sky. From the proximity

ty of Nova Scotia to the Mexican stream, she enjoys the amelioration of climate thus produced in a higher degree than any of the British provinces. Her earlier spring—later autumn, and, consequently, longer vegetating period, give a decided advantage over New-Brunswick, whose difference of latitude is not sufficient to explain its greater winter severity, and the brevity of the summer. From the causes thus briefly alluded to, the climate is variable, and liable to sudden changes. The north winds are cold, and the north-east winds are always chilly; and the latter, except in the month of May, are accompanied by rain or driving snow storms. The south winds bring low flying clouds and showers. The south-west wind rolls in banks of fog, except in the summer, when, with the westerly breeze, it is warm and pleasant, or attended with thunder showers. The most prevalent winds are from the north-west, to which point they always return after a storm.

It is attested by thermometrical observation, as well as by the experience of the oldest inhabitants, that the cold of winter is less intense, and the weather more variable, than formerly, and that the climate is annually growing more mild. The same facts have been observed and noted in Canada, and the eastern States. It is certain that in Nova Scotia the severity of the winters have gradually relaxed during the last century, and exotics, that formerly refused to grow, now flourish luxuriantly. The winter of 1848 was remarkably mild. According to a table contained in a description of Nova Scotia, published in 1825,* the mean annual temperature of the Province was, in—

*Author unknown.

1814—43°	9.	
1815—42	22.	
1816—42	24.	
1820—41	45.*	
1821—39	8.	
1822—42	33.	
1844—40	10.	} At Cornwallis.
1845—41	41.	
1846—41	80.	
1847—42	35.†	

In some of the coldest nights of January and February, the mercury will descend to 25° below zero, and in the hottest day of July and August it rises to 96° Fahr. The climate is somewhat dissimilar at different places, and the spring is earlier and warmer in the interior than on the sea coasts. The heat of summer is, in general, regular and moderate, and there are only a few days of extreme temperature. The autumns are delightful, and the air clear, elastic, and healthy. This season is peculiar on account of a calm and pleasant period called the Indian summer, when the fading leaves of the forest present brilliant tints of every color. About the first of December the nights become cold, and bracing westerly winds begin to blow. The winter commences by the first of January, and may be said to continue until the latter part of March, and sometimes into April. At this season the atmosphere is frequently loaded with frosty vapour. Driving storms pile up the snow, half burying the farm houses, obstructing the roads, and mantling the earth in white. The hardest woods crack with the frost, and the thickened ice of the rivers and lakes

*History of Nova Scotia, by Thomas C. Halliburton, Esq., Vol. II., p. 348—1839.

†By the Author.

sends out low bellowing sounds like distant thunder. In March the atmosphere becomes clear. The frosty nights that succeed the warm sunny days form a crust upon the snow, and the Indian traverses the forest upon snow shoes in quest of Moose and Cariboo. By the first of April the scene is greatly changed. The robin, blackbird, sparrow, and other migratory birds, begin to return, and large flocks of wild geese, in columns resembling the Queen's broad arrow, singing their only song the loud *coo-hoonk*, are seen pushing onward to the north-east for summer quarters. Summer soon commences, and nature puts on her gayest dress. The woods and coppices are filled with sweet songsters, and every animated being rejoices in the plenitude of existence.

The gradual elevation of temperature, and amelioration of climate, has been produced by the clearing of the earth's surface of a part of its forests, and the extension of cultivation. Just as the forests are succeeded by cultivated fields, bogs and swamps are drained, and the improvements of agriculture are introduced, so will the climate be mitigated. The earth, when covered with a thick growth of vegetables, offers a surface that radiates heat very slowly, and the direct rays of the sun have but little influence over its temperature. Snow remains undissolved beneath the lofty trees, and evergreens of the wilderness, after the cleared lands have become dry, and cultivated plants, have begun to blossom. The woody shades are cool retreats in summer, while the radiation of improved fields gives great heat. The early snows that fall upon the cleared ground seldom remain through the winter, while those that drop among the woods do.

not all disappear until the first of May, or even later, when the fields afford sufficient grass for cattle.

The principal peculiarities of the climate are the great extremes of temperature, and the sudden transitions from heat to cold. Thunder and lightning are violent. It is doubted by many whether the mitigation of climate evidently produced by the removal of the forests, were it advanced much farther, would be of any advantage to the country. The snow, formerly much dreaded by Europeans, is decidedly advantageous. Upon it timber is cheaply transported to the saw mills; hay is removed from the marshes and intervales; and poles for fencing, with wood for fuel, are obtained for summer supplies. The most fruitful seasons have been preceded by winters of deep snow, which are supposed to keep the earth warm. In April the grass begins to grow beneath the deepest drifts. Excepting the fodder that it requires for live stock, the winter is no material drawback upon the labor of the farmer. In it he thrashes his grain, fattens his oxen and swine for market, and prepares for the coming spring. The coldest months afford the season of the greatest gaiety—courtship and weddings are more frequent then than in the sultry months of summer.

From its excessive rigor, great extremes and sudden changes,* it might have been expected that the climate of Nova Scotia would soon undermine the human constitution; but experience has proved its salubrity. The diseases are chiefly of an inflammatory character, and pulmonary consumption. The

*Weather wisdom is considered a necessary part of the farmers' knowledge. The precursors of a storm in some parts of the country are considered to be—the sweating of an anvil, or grindstone—the crowing of a cock at midnight—hissing of the fire—a cat seen washing her face—the early rising of the *gude-wife*, &c.

climate is free from the bilious and intermittant fevers of the western States; and parts of Canada; and no specific diseases are generated in the country. Many of the inhabitants attain the age of ninety years, and a few reach a hundred, and upwards. The most fatal diseases are those introduced by passenger ships from foreign parts.

The operations of the climate upon the produce of agriculture, are more favorable than in other countries under the same mean annual temperature. Besides the fruits of the temperate regions, the great heat of summer permits those of a tropical character to flourish—hence a greater variety may be produced than in any other part of the world. The winters are milder than those of New Brunswick, Lower Canada, or the State of Maine. The season for vegetation is sufficiently extended to ripen all kinds of grain, vegetables and fruits. Only 92 days are required to ripen wheat, rye, barley, and oats, under a medium temperature of 52° Fahrenheit. Buckwheat will ripen in 70 days. Pulse, peas, and a number of garden vegetables are brought to maturity in a much shorter period; but the winter wheat raised in Upper Canada and the United States has not been successfully cultivated in this province. The humidity of the atmosphere renders it peculiarly favorable for the growth of potatoes, which in the middle counties have suffered less from the blight than in almost any other part of America. There were shocks of earthquakes in Nova Scotia in the years 1663, 1827, and 1839. A shock was also reported in 1847. The aurora borealis is extremely brilliant, and sometimes displays a red, yellow, and blue light. Occasionally it rises to the zenith, and has been seen to overspread the great arch of the

heavens. Meteors are common at all seasons of the year. Large tracts of forests have been devastated by tornadoes.

The following table has been prepared from the Memoirs of the American Academy, and other sources :

Comparative time of flowering of Plants.

	Nova-Scotia	Montreal, (Canada)	New-York	Philadelphia
Claytonia Virginica, (Spring Beauty)	April 20th	April 16th	April 10th	April 6th
Ulmus Americana, (Elm)	May 2d	May 10th	" 20th	" 10th
Acer Rubrum, (Soft Maple)	" 10th	" 5th	" 12th	" 10th
Acer Sacharinum, (Sugar Maple)	" 4th	" 6th	" 26th	" 15th
Leontodon Taraxacum (Dandelion)	" 16th	" 15th	May 1st	" 22d
Fragaria Virginica, (Strawberry)	May 15th	" 15th	" 8th	"
Pyrus Malus, (Apple)	" 29th	" 25th	" 6th	" 20th

SOILS.—Every well ascertained fact in regard to the physical structure of the earth, and the chemical composition of its materials, is embraced by the science of geology: now as all the soils have been derived chiefly from the rocks, the solid framework of the globe. This science, by demonstrating their origin, the causes of their diversity, and their properties, is of the highest importance to agriculture.

The rocks from which the soils have been produced, and upon which they repose, may, for the present

object, be divided into four classes, namely, such as have been formed by the agency of heat, (igneous,) such as have been produced by water (aqueous), by animals (coralline), and those composed more or less of vegetables (carboniferous.) The soils have resulted from the disintegration and decomposition of each of these classes of rocks, which of themselves have afforded great variety: that variety has been increased by mixture. Whenever we remove the superficial covering of the earth to a sufficient depth, we will find the solid rocks. Immediately above these rocks there may be broken masses succeeded by beds of stones, gravel, sand, clay, &c. The uppermost coverings are called the subsoil and the soil. The fertility of the latter will depend in a great measure upon the fineness of its particles, and the number and relative quantities of its ingredients. In numerous places the rocks not only reach the surface, but rise into lofty cliffs, defying the industry of man. Between these cliffs, and in the lower grounds and vallies, soils of greater or less depth will be found.

Even the hardest rocks, when they are exposed to the heat of summer, the frost of winter, the air; winds, rain, and the operation of currents of water, gradually crumble down. By the silent, but never-ceasing operations of meteoric agents, the flinty mass is reduced and converted into a fertile mould, which, if it be not retained in the shallow basins of the table lands and slopes, is carried downwards by numerous descending streams to the vallies, where it forms a soil capable of producing plants. There are also collections of rounded masses of rock called boulders, as unproductive as the naked mountain mass. Besides these deposits of mineral substances, thick layers of

alluvial matter are spread out over the lower grounds, and to which daily additions are made from the dilapidations of previously formed beds. These soils are the most fertile, for the more finely matter is divided, the better it is adapted to vegetation. The most recent of the earth's chemical and mechanical agents are best fitted for the support of vegetables. Mixed in these fine soils are the remains of plants in a state of decomposition, or in humus, which possess as great fertilising properties, still minerals form the true basis of all soils.

As each of the classes of rocks before mentioned generally occupy certain and well defined districts, we might expect to find soils peculiar to each circumscribed within fixed bounds; and such is really the fact to a certain extent. By disintegration the sandstones have yielded sands, and the argillaceous strata, clay. The soil of limestone is always calcareous, and that derived from gypsum abounds in the sulphate of lime. The trap rocks furnish a feldspathic soil, and the gravel covering granite is peculiar to that rock. From a knowledge of these facts, and the details connected with them, the geologist is enabled to arrive at correct conclusions respecting the properties of soils belonging to any country, by the examination of its rocky formations.

There are regular zones of vegetation peculiar to the geology of each district. Such zones may be traced throughout the whole of Nova Scotia, and they are so well defined that not only may the vegetation of a district be described from a knowledge of its rocks, but vice versa, the nature of the rocks may be correctly judged of from the plants that grow upon them. Grain, and especially wheat, will yield but

meagre and blighted crops on soils that contain no lime : whence is that mineral to be obtained by the living plant except from the soil. Maize, or Indian Corn, requires little or no lime, and this fact will explain the cause why it will grow well upon land that will raise no wheat.

Geology at once supplies us with the general characters of the earth's productive coverings, and chemistry instructs us in their local peculiarities and those minute details which must ever form the basis of successful tillage. The surface of almost every country presents the inquirer with an assemblage of heterogeneous bodies, apparently thrown together in great confusion ; but careful inspection will soon inform him that not only the different classes of rocks, but the soils that repose upon them, succeed each other in regular order, and their boundaries may be traced upon a map. To perform this work has been the chief object of the Ordnance Geological Survey now yearly advancing in Great Britain. It must not, however, be understood, that the different kinds of soils are always to be found resting upon the rocks that have supplied them. I have remarked elsewhere that it is very evident that the whole continent of North America has been submerged beneath the ocean, and exposed to violent currents of water, at some remote period or periods in the earth's history. By the operations of those currents and ice, the rocks have been transported in boulders, gravel, and sand ; the beds of clay and fine materials have been produced by the falling of sediment in situations where the waters were tranquil. The *detrital* deposits are therefore not always confined to the surfaces of their parent masses, but are frequently found to have been spread over rocks of other

characters, and thus the hard unyielding strata have been covered by rich diluvium, and the earth has been prepared for the extension of cultivation.

Boulders from the granite ridge, extending from Annapolis eastward to Hants county, are found scattered over the clay slates to the south, at all distances to the Atlantic coast. Boulders of trap rocks, identical with those of the north mountains of Kings and Annapolis, have been carried to the south, and now rest upon the granite; and masses of sandstone, belonging to the coal field of Cumberland, are now found on the south side of the Bay of Fundy and Basin of Minas. Beds of gravel, sand, diluvium, and fine clayey sediment, have resulted from this kind of transportation. The direction of the currents is marked with unerring precision by the parallel grooves and scratches seen in the fixed strata of every part of the Province. Similar facts have been observed in each of the British Provinces, and the eastern American States.

The general courses of the mountains and hills in North America are from the south-west to the north-east. This is the ordinary direction of the hills and the stratified formations leaning against them in Nova Scotia. We therefore find belts, or tracts of soil, running in those directions, and resting on the slopes and in the vallies. By delivial currents, the *debris* and soils from the rocky groups have been transported to the south, but not so far that the belts or zones of those soils may not be traced along the country. There is then a geographical distribution of soils, the knowledge of which is of much importance in the settlement of a new country, and the survey of its lands. The soils now forming from the disintegration of the

rocks still exposed to meteoric agents, are found upon the rocks themselves, or along the courses of the streams that descend from them.

It is not intended in this place to enter upon an extended account of the geological structure of the country. For the purpose of general description, it may be stated that running along almost the whole south-eastern coast of Nova Scotia from Barrington to Cape Canseau, there is an irregular belt of granitic and sienitic rocks. A similar belt extends from the county of Digby, in the rear of Annapolis town, eastward, through the central parts of the south mountains to the county of Hants. The same rocks also form an elevated ridge, extending from Parrsboro', on the west, to River John, on the east, including the hilly tract called the Cobequid Mountains. The agricultural features of these districts are similar. The rocks protrude the soil, and frequently form rugged cliffs, and the walls of narrow ravines. There are flat areas, occupied by boulders and angular blocks of stone, often covered by peat. The wild vegetation of these forbidden tracts is scanty. With them there are patches of soil reposing upon the rocks and also upon beds of gravel and sand. These are capable of cultivation, and in their natural state produce groves of pine, spruce, or of the harder woods beech, birch, and maple. Small lakes, peat bogs, and swamps, are common. The stony tracts bear stunted trees, with laurel, uva ursi, whortleberries, and cranberries. The "barrens," as they are called, are sometimes the resort of immense flights of pigeons.

The soil derived from the igneous rocks known as granite and sienite, is peculiar; its chief properties arise from the presence of silica, clay, lime, magnesia,

and potash. It is favorable to the growth of white pine. Of itself, granite is not very productive of grain; but in Nova Scotia it is mixed with the minerals of the numerous trap dikes, and drift, whereby its power is increased.

The whole north-west coast of the Province, next the Bay of Fundy, from Brier Island to Cape Blomendon, is one continuous belt of trap, greenstone, and amygdaloid, known in Kings and Annapolis counties as the North Mountains, upon which cultivation has increased rapidly within a few years past. Another ridge is connected with the granite of the Cobequid range, and running westerly, terminates at Chignecto, occupying a tract at Parrsboro' from four to seven miles wide. The soil of the trap rocks of the North Mountains is eminently fertile. The numerous streams that descend from them into the vallies of Annapolis and Kings Counties, have carried down great quantities of the fertilising decomposed trap, and all the lands skirting the flanks of the mountains have been enriched. Besides having a southern aspect, this tract is sheltered from the bleak winds of the north-west, and so far as it is occupied, cultivation is bountifully rewarded.

The feldspar of these trappean rocks, besides silica, contains alumina, potash, and soda, and the hornblende contains lime. The presence of these alkalies is sufficient to explain the active character of the disintegrated matter which is abundant, especially upon the amygdaloid. Decayed trap has been successfully applied as a manure. In some parts of the Province it is to be procured by digging.

We may now turn to those soils which have resulted from the exposure of that most extensive class of

rocks which has been formed by the agency of water, and is known by being laid in distinct layers, or strata. They are extremely various in composition and efficiency. Running parallel to the belts of granite above noticed, and with their strata leaning against them, the *stratified non-fossiliferous*, or metamorphic rocks, occupy extensive tracts of country. One of these tracts reaches from Yarmouth in an easterly direction through all the southern counties to the Gut of Canseau, meeting the granite. A similar zone extends from Yarmouth in the direction of St. Mary's Bay through the southern part of Kings and western part of Hants, across the Shubenacadie to the higher lands westward of St. George's Bay and the Gut of Canseau. This group occupies a large portion of the counties of Halifax, Lunenburg, and Queens, and is characterised by the presence of mica slate, hornblende slate, chlorite slate, graywacke, graywacke slate, and clay slate.

The soil that follows the crumbling down of the mica slate from the greater deficiency of hornblende and feldspar, is more sterile than that of granite; but the extent of this rock is very limited in the Province. The soil of the hornblende and chlorite slates is of a better quality, but it is deficient in those minerals that chiefly stimulate vegetation. All the varieties of graywacke yield but slowly before the elements. In Nova Scotia they are partially covered with deposits of drift sand and gravel, but in situations where they are exposed to the weather, they contribute but little to the formation of soil. The clay slate forms a considerable part of the group under consideration. Its strata and lamina are broken up by the expansive force of water while freezing, and their disintegration is frequently very rapid. The decomposition is also hastened by

the presence of the sulphates of iron and alumina. The soil produced is thin and cold. The task of bringing it into a profitable state of culture is expensive. Much of the soil in the county of Halifax is of this description. The natural herbage upon this group frequently indicates its sterility. Scrubby evergreens and bogs, covered with whortleberries, are common. With them there are peat bogs and low tracts covered with cranberry vines. The acidulous and vitriolic slates afford a soil almost poisonous to plants of every kind. The gravelly beds are usually occupied by beech, birch, and maple; and wherever there is a sufficient depth of fine soil upon such grounds, wheat, oats, potatoes, and Indian corn grow well,—yet they require to be freely manured and well tilled. The intervalles are rich, and produce good crops of hay. The best tracts are covered with alders.

Accompanying the rocks just mentioned, there is another group which I have described as being equivalent to the Silurian system of Europe.*

The rocks of this system contain the remains of marine animals, and lime. They skirt the sides of the south mountains at Digby, Annapolis, and Kings. They also appear in the County of Pictou, and on the sides of the Cobequid range. In situations where there are no compact limestones, the shells now fossilized have imparted the phosphate and carbonate of lime to the rock, and thereby improved the soil resulting from its dilapidation.

Succeeding the above rocks there is a red micaceous sandstone, accompanied by beds of red shale,

* Proceedings of the Geological Society of London, Vol. IV. Part I. p. 186.

marly clay, and conglomerate. These rocks occupy the long valley of Kings and Annapolis,* and a considerable tract on the north side of Minas Basin. From their yielding nature deep soils have been produced, and the lime contained in the marl beds has contributed much to their fertility. These districts possess the most valuable agricultural qualities, and embrace some of the richest lands in the Province.

The coal fields of Nova Scotia skirt nearly the whole of its northern coast, and form the isthmus between this Province and New Brunswick. Two belts of coal field, one on each side of Minas Basin, unite in the district of Truro, extending eastward to Pictou, Merigomish, and Pomket. The coal field of Nova Scotia has an area of upwards of 2,500 square miles. The prevailing rocks are red, gray, and chocolate colored sandstones and conglomerates—red, blue, and black shales, shaly limestone, clay iron stone, and bituminous coal. The dilapidation of the sandstones affords soils of several colors. These are sometimes thin and meagre. The shales on the other hand produce stiff and wet clays, which are often poor and unmanageable: draining and lime are most necessary to their improvement. The limestone and ironstone occupy only small tracts. Wherever these soils have been formed and repose directly upon the above rocks, they present the characters described; but from causes already noticed—namely, the operations of diluvial currents—those soils have been almost universally mixed, a great variety produced, and their general fertility improved. We therefore frequently find a deep

* Geology and Mineralogy of Nova Scotia, by the author, Gossip and Coade, 1836.

red marly loam, with a clay subsoil, light sandy earths adapted to the raising of Indian corn, and vallies containing a dark brown mellow soil, abounding in humus. With these are beds of gravel and sand, whose soils are too porous to withstand the drought of summer, peat bogs, or alder swamps, and patches of white and yellow sand, covered with stunted trees, laurel and whortleberries. From being annually irrigated like the Banks of the Nile, the intervalles are always productive. Some of them have resulted from the labors of the industrious beaver, which, until they were destroyed, constructed dams across the rivulets to supply the water that protected them from their enemies. Such tracts are now called beaver meadows.

Besides the above geological districts, we have another of still higher perfection. The limestone and gypsiferous district embraces a large tract in the counties of Hants and Colchester; it also appears at Cumberland, Pictou, and Cape Breton. It is distinguished by the prevalence of red sandstones, conglomerates and shales, accompanied by thick deposits of limestone and gypsum. By the disintegration of the latter rocks, some of the soils are rendered almost sterile by the superabundance of the sulphate and carbonate of lime. Such soils might be advantageously mixed with those that lack those minerals. The sandstones contain lime, and marly clays are not uncommon. From the variety and stimulating nature of the minerals forming the soils of these districts, they are generally productive. They also possess the great advantage of containing limestone, which may be cheaply employed at the discretion of the farmer.

I have already adverted to the transported collections of boulders, gravel, and sand, which everywhere

obscure the rocky formations just noticed. It is necessary to guard against the opinion that each of those formations will everywhere display its own peculiar soil. The diluvial currents that have swept over the surface have mixed all the moveable materials upon the crust of the earth. These *detrital* collections and transported soils are almost always different from those derived from the rocks situated beneath them. It is thus we find sterile tracts of sand and clay upon the fertile red sandstones, and rich ones upon the unyielding granite. Very frequently also the materials brought from a distance are mixed up with those native to the spot, and thus the qualities of the soils are greatly modified. The most casual observer will be struck with the contrast in the productive character of the soil in different districts, and he will find its variation in fertility to have a most evident connexion with the rocky strata of the country. The greater relative fertility of parts of even a single field, can be traced to the geological peculiarities of the surrounding district. In an agricultural point of view, alone, a good Geological Map of Nova Scotia would be very useful; for, from a knowledge of the geological boundaries of each rocky formation, the general character of the prevailing soils may be ascertained with an accuracy sufficient to guide the farmer in his principal operations.

We have here to notice another class of soils, denominated alluviums. These are forming and collecting every day through never-ceasing meteoric operations, and the influence of water. Alluviums are of two kinds, marine and fresh water. These varieties are frequently mixed at the mouths of rivers, or where the descending streams meet the sea. Marine alluviums are found and collected chiefly by the operations

of the sea. The great marshes of Hants, Kings, Annapolis, and Cumberland counties, are of this character, and large tracts have been rescued from the ocean by dikes, or embankments. The properties of the alluviums are influenced by the nature of the rocks whence they are derived. The marshes of Hants, Kings, and the borders of Minas Basin, are formed by the dilapidation of the marly red sandstones and trap rocks of the adjacent shores : hence they are more fertile than those derived from the grits of Cumberland. The alluviums collected by the rivers opening directly into the Atlantic are scanty and meagre ; and as the tides attain an elevation of only a few feet, they are imperfectly drained.

All the mouths of the rivers emptying into Minas, Cumberland, and Annapolis Basins, were once open estuaries, which have been filled up by gradual deposits of sediment from the tide waters. The deposit of sediment goes on until the top of the alluvium reaches within one or two feet of the level of the highest tides, when it ceases. In digging into these marshes, collections of shells, the forest trees of the Province, drift wood, &c., are found in every quarter. Fragments of the wrecks of vessels, broken canoes, harpoons, and other relics of the native Indians, appear ; also the old bridges, wooden shoes, and other works of the old French settlers are dug up in opening drains, and in many instances they are proofs of the rapid collection of these valuable alluvial tracts.

The preservative powers of these salt alluviums are very great, equalling those of peat bogs : trees dug up from depths of twenty feet, and which must have been buried for long periods, are perfectly sound. The small bridges erected, and the piles driven by the

French at least a century ago, are still undecayed. The piles of a causeway at Bay Verte, built by La Corne, near his fort, are preserved. It is evident that the tides of the Bay of Fundy are gradually rising, or attaining a greater medium annual elevation. This fact effects the formation of marshes. On the borders of some tracts there are ranges of stumps of trees standing in their natural positions, and now buried in the alluvium several feet. At many places the alluvium is found resting upon upland, the plants of which have been driven back and succeeded by marine productions. In Prince Edward's Island I observed groves of forest trees which had been destroyed by the influence of sea water. These facts fully accord with the observations of the oldest inhabitants; and the dikes, or embankments, that now protect the fertile marshes from the ocean, require greater strength and height than they did in former years. The tides of last autum were remarkably high—many dikes were broken, and much valuable land overflowed.

The freshwater alluviums are universally called *intervalles*; these have resulted from the wearing down of the rocks, the wasting away of previously formed soils and vegetable matter, all of which are annually brought down by the freshets, and spread along the borders of the streams. These *intervalles* are of two kinds—the high and the low. Since the former were made, the streams have worn for themselves deeper and wider beds; obstructions have given way, and they cease to be overflowed by the floods of spring and autumn. The low *intervalles* on the other hand continue to be overflowed, and are therefore valuable for grasses. At many places along the courses of the streams these *intervalles* are seen in beautiful terraces.

which mark the ancient boundaries of the water and the successive steps to which it has retreated.

The quality of these soils is also modified by the nature of the rocks over which the streams descend ; but from being finely divided and mixed, they are usually productive. The low intervalles are annually enriched by the fine sediment laid upon them by the freshets. In some few instances the barriers of lakes have given way, and they have been drained, and there is a lacustrine soil of great fertility. Much of the *detritus* of the land is always carried into the sea, and swept away by the tidal currents into tranquil basins. A considerable check to the loss of fertilising matter is sustained by the tidal waters of rivers which bring back on the flood what had been lost by the ebb. Breakers pile up beaches of sand and shingle at the *embouchures* of the streams emptying directly into the sea. Bars of sand resist the transportation of the debris, and in time their inner basins are filled with alluvial matter.

From the constant deposit of detrital matter, the tidal portions of many of the rivers are silted up. The Basins of Minas and Cumberland grow shallow yearly, and the time is approaching when the shallow estuaries along their borders will become marshes.

The occupations and habits of the inhabitants of any civilized country will ever be influenced by the geological structure of the districts they inhabit, and by the facilities of transport. The presence of coal and iron lay the foundation of manufacture, while the peculiarities of the soil determine the condition of agriculture. The advantages of communication by water, and the fisheries, have heretofore had an important influence upon the positions of the settlements

in Nova Scotia. We find the chief villages stretched along the banks of the principal streams, especially where they are clothed by marshes and intervalles. In these positions much of the soil is good. There are, however, some unreclaimed inland tracts, that offer encouragement to manufacture and agriculture.

Although to enter upon a minute description of the soils of the Province is no part of the present object, it may be remarked that the ash of plants contains a number of mineral substances. The ash of bean straw contains upwards of 50 per cent. of potash, and from barley straw 73 per cent of silica has been obtained. The principal mineral substances in the ash of wheat, barley, and oat straw, are potash, soda, lime, alumina, magnesia, and silica. Now it would be difficult to conceive whence these minerals could be derived for the support of the growing crop except from the soil, and it must be obvious that if there is a deficiency of any of these minerals in the soil, the produce thereof will be imperfect. To supply the substances that are wanting, and to regulate the quantities of those that do exist, are most important objects. Chemistry and Geology are therefore the handmaids of agriculture. The ash of one crop is very different in kind and quantity from that of another. The ash of wheat contains from 18 to 20 per cent. of potash, but the potash in the ash of oats is only about 6 per cent. The former has 20 per cent. of soda—the latter only 5 per cent. According to these facts, wheat will exhaust the soil of its lime and potash much more rapidly than oats; and this demonstration, with many others of a similar kind, is corroborated by practice. Soils contain the above minerals in greater or less proportions; plants also receive them from the earth in

different quantities. The experience of the farmer has taught him to apply certain plants to certain fields ; but chemistry is the proper guide in fixing their habitations : hence also we deduce a natural reason for the rotation of crops. Many are surprised that felled forests of hard wood are succeeded by spruce and fir ; but nature evidently directs this rotation, and only allows such trees to spring up as the surface of the earth is able to bring to perfection. A backwoodsman once told me that he raised wheat and potatoes upon a piece of ground until they would grow no longer ; he then "pitched it out for a rabbit pasture and cleared a new bit." Such rabbit pastures are seen in every part of Nova Scotia, and the change of crops displayed by the forests is disregarded in the practice of husbandry.

The leaves that fall from the woods in autumn give the earth an annual top-dressing. A part of the inorganic matter taken up by the trees is thus returned to the soil which is constantly renovated. This fact gives the farmer an useful hint. There are certain tracts to which gypsum might be most beneficially applied—others would be benefitted by the carbonate of lime. Some soils require the introduction of vegetable matter, some lack the saline ingredients. These, and many other important particulars, are not understood. Immense quantities of valuable manures are lost for the want of that general knowledge of chemistry and geology so requisite to preserve them, and to guard against their improper application. The causes and effects well known to science are disregarded, and much labor is lost in experiments performed in ignorance of the most obvious laws of nature.

Practical chemistry, geology, and the first principles of agriculture, are untaught in any of our colleges or schools. The physical sciences are not cherished by

the Legislature, and the few individuals who have devoted their time and energies to the most useful inquiries, have labored under every discouragement.

Among the resources of the country, manures, or the means afforded for renovating the soil, are of importance, especially in districts where agriculture must form the chief branch of industry. In few countries are manures more abundant and varied than in Nova Scotia. There is scarcely a tract to be found which may not be improved by its own lime, peat, or sea-weeds. I have found it convenient to separate the substances employed to renovate and stimulate the soil into three classes, namely—

Animal,
Vegetable, and
Mineral Substances.

Animal substances act powerfully upon the soil, especially during their decomposition. In Hungary, and other parts of the world, dead flies are collected and employed for manure. In Nova Scotia the undigested animal manures consist almost altogether of dead fish and fish offal, and these are often allowed to be wasted in heaps rather than applied to the soil. Herring are sometimes taken upon the coast in such quantities that the fishermen are unable to preserve the whole catch, and with smelts and caplin, they are taken for the sole purpose of supplying manure. The taking of fish for this object is very reprehensible, and should be prevented by law, for it tends to destroy the young fry and the bait that allures the deep sea fish to the shores. Herrings, smelts, or caplin, are taken upon the shores of New Brunswick and coast of Gaspe in great quantities and carted into the fields. This unprepared manure produces a few good crops, but by its constant application the soil loses many of its natural properties, and finally becomes very meagre.

FISH OFFAL.—The offal of fish at the fishing stations, is sometimes carried to the adjacent fields; but both fish and their offal would be much more advantageously employed by throwing them into composts with earth, sod, or peat. Six barrels of such refuse are sufficient for 25 loads of compost.

The organic and earthy matter of bones have long been known to be powerful stimulants to the soil; and as a manure, bonedust is perhaps equal to guano. There is not a bone-mill in the Province except at Horton. Bones are shipped from St. John, New Brunswick, to Great Britain, where they are ground for manure.

It has long been held that the digestion of food increases its fertilising powers, and practice has proved that the excrement of animals which take rich food is superior to that of lean stock. The farmers of Nova Scotia have heretofore depended upon the collections of barn manure found beneath the stable windows in the spring, and from the length of the winters, and great quantity of fodder consumed by the stock, these collections are of the first importance to their crops. These animal productions are either employed immediately, or allowed to remain over until the succeeding season. The latter preparation is deemed necessary when the manure is intended for Indian corn. It is seldom thrown into compost, and the ammoniacal and other gases are allowed to escape into the air. In autumn such manures are frequently laid in heaps upon the fields, where the frosts and thaws of winter, and the rains of spring and autumn, carry off the most essential of their fertilising properties. Among the refuse of the farming premises, none is more valuable than urine—1000 lbs. of which ordinarily contain 65 lbs. of the richest dry fertilising matter. There are few instances in

the whole country where any attempt is made to preserve urine for manure. It is universally allowed to escape, and the whole wash of the barn yard and piggery are permitted to run off. It therefore happens that at least one half of all the fertilising matter contained in these animal productions is lost. The collections of night soil and urine into proper pits, and a careful management of the stable product, would afford the means of increasing the crops two-fold above those of the present slovenly system.

That part of the straw of the grain crop which is not consumed by the live stock, or used for litter, is valuable for manure, and together with green weeds, rushes, and whatever decomposable matter can be collected, should be thrown into the pit, or reservoir, and finally removed to the compost; but often is the barn built upon some small eminence, and the most valuable fertilising substances are swept away by every shower into the brooks and swamps, where they are lost. Upon new farms the decayed straw of the grain crops and collections from the stable sometimes collect in such quantities that they incommode the new settler; and instances have occurred when, instead of applying the manure to the soil, the barn has been removed from the manure in order to obtain "a clean place." A first, second, and even third crop, may be raised from the virgin soil of some lands, and often does the new beginner, as he is called, prefer clearing the timber from a new patch to manuring and tilling the land already rendered fit for the plough.

VEGETABLE MANURES.—Vegetable manures consist of plants in different stages of fermentation and decomposition. As the soil supplies each crop with a certain amount of inorganic matter, the restoration of that matter to the earth by carrying back to it such parts of the

plants as are not employed for food, seems to be directed by the operations of nature which renovates the soil annually by a top dressing of leaves. The dry leaves of some trees yield 80 per cent. of saline and earthy matter, and experiment has proved their value to the growth of cultivated plants.

Vegetables are applied to the earth under four different conditions—namely: in green, dry, and decomposed states, or after they have been digested by animals. When green vegetables are plowed in, they heat, ferment, and decompose rapidly. Green manuring has therefore been practised from the earliest periods. The Romans plowed down the green lucerne, the Italians the lupin, and the Germans the borage. In Britain and France, clover, buckwheat, tares, and rape, are favorite plants for this object. In Nova Scotia where the second, or autumnal crops of clover would be quite sufficient for the purpose, the practice is seldom resorted to. The numerous weeds that infest the fence rows and ditches, and scatter their seeds over the adjoining fields, are seldom collected into composts and prepared for each succeeding crop of grain, or roots.

MOSS, MOSS EARTH.—The cohesiveness of clay prevents its improvement, and sand is unproductive from a contrary cause; if moss, or moss earth, mixed with lime, or previously composted with the alkali, be applied to the tenacious clay, its texture is loosened, and a wider range is offered for the roots of plants; it will be less retentive of moisture, and less adhesive.

SEA WEEDS.—*Algæ Marinæ*, or sea weeds, supply both organic and saline matter to the soil. Although their effects are considered to be of brief duration, they are important as manure. They are peculiarly valuable, as the salt contained in them destroys foul weeds. The cultivated fields of the coasts are almost free from those

noxious plants that infest the lands of the interior. Sea-weeds are applied to the lands in small quantities, on almost all the coasts, and especially by the fishermen, who depend upon their potato and cabbage patch for a part of their subsistence; but this kind of manure is generally neglected by farmers in situations where it might be cheaply obtained, and the high price of labor has operated against its more extended use.

Dry vegetable matter, straw, weeds, or hay, can be made to ferment, and consequently to act upon the soil. The decay of saw dust is slow, yet it enriches the earth where it is applied. The numerous saw mills in the Province produce great quantities of saw dust, which is washed away, and lost.

The powder of charcoal will absorb noxious vapours, and oxygen from the air, and also take up the impurities of water. It is therefore of much value for mixing with liquid manure and night soil. In a country abounding in wood, charcoal may be advantageously employed in agriculture. The stagnant water seen near farm-houses might be converted into rich fertilising matter, and the air around them rendered pure and healthy by the employment of charcoal.

PEAT.—Peat has long been employed for manure in Europe, and wherever the earth is deficient in vegetable matter it is very valuable. Within a few years past it has been brought into use in America, especially in the United States, where it is made into composts with lime, or stable manure. This kind of decayed vegetable matter is gradually coming into use in Canada and Nova Scotia. In the latter Province it is very abundant. Besides the peat produced by the growth and decay of sphagneous plants, deposits of decayed wood and leaves usually called black mud, are common in all the swamps.

The experiments of the late Lord Meadowbank, and others, have proved that after it has been dried, peat may be fermented, and made to impart much fertilizing matter to composts. If the sour water be drained off, and the peat mixed with an equal quantity of barn manure, the moss will be as efficacious to the crop as the best stable dung. Peat may be very cheaply and advantageously employed by carting it into shallow pits made in the barn yards, and lined with clay, where it may be so placed as to absorb the urine and wash of the stables. Under such circumstances it ferments, and forms a powerful renovator of light soils. By such simple operations, thousands of farmers might increase their supplies of manure four fold; and there are few tracts where peat, muck, or black mud, may not be procured for the purpose.

After peat has been partially dried, it may be thrown into heaps, and burnt, or charred. Such charred peat will secure the ammonia of all liquid manures and night soil. Peat ashes* are admirably adapted to the fertilization of all stiff clays. An experiment is occasionally performed by carting peat or black mud from the bog directly to the fields, and its use has been condemned, because in this way it did not increase the crop. Dry peat is almost inert; it is rendered useful by being brought into a fermentative state, and frequently in the bog it contains vitriolic acid which is deleterious to vegetation. The acidulous water should always be drained off, and some of the means briefly noticed above should be applied to render it beneficial.

POMMAGE.—In the counties of Kings and Annapolis, quantities of pommage, commonly called *pummis*, col-

* NOTE.—Peat ashes abound in carbonate, sulphate, and phosphate of lime; with these exists *free* alkali, and each of them is a valuable fertilizer.

lect around the cider mills. The malic acid contained in this pommage in its first state is very deleterious to vegetation ; but if the refuse of the cider press is mixed with one tenth part of its bulk of ashes, the acid is neutralized, and the mixture rendered an active manure. In 1847 the author raised 300 bushels of the Ruta Baga from one quarter of an acre of land manured with pommage and ashes that had lain eight months in compost.

ASHES.—Besides potash in an impure state, the ashes of wood contain the sulphate and silicate of potash. These are valuable ingredients in the soil. Ashes have therefore been extensively used in the old countries. The general employment of wood for fuel, during the long winters, affords great quantities of ashes ; but instead of being kept dry, they are almost universally thrown away, and their fertilizing properties are either lost or much impaired by the weather. Much ash is left upon the ground after the burning of heavy timbered land, and as there are no potash manufactories in the Province, the alkali is lost. After the firing, the chief part of such ashes might be collected and most beneficially applied to the old lands. Coal ashes should also be kept dry, and mixed with lime they greatly improve moory and peaty lands. The coal ashes of the City of Halifax are carted to the lands of the peninsula, where their fertilizing effects are manifest. Burning the surface, and applying the ashes to the remaining soil, has long been practised in Britain ; and this mode is peculiarly applicable to the peaty and boggy soils of Nova Scotia.

MINERAL MANURES.

LIME.—It is universally acknowledged that lime is of the first importance to agriculture. It has been employed in Europe from the earliest periods up to the

present time; with never failing success. Lime is abundant in Nova Scotia;—it presents itself at numerous localities throughout the central, northern, and eastern parts of the Province, with the gypsums of the red sandstones, and also with the slates that traverse the entire length of the country. The variety of its colors, and external characters, have been checks to its discovery, by the inhabitants, and no public inquiry has been made by men of science by which it might be introduced to agriculture. Of late years the grants of land made by the crown have reserved the lime, and even the clay, with all the mines and minerals. These are claimed by the General Mining Association of London. This reservation has, in some degree, checked the opening of limestone quarries, and the erection of lime kilns. The lime calcined in the Province is chiefly applied to building purposes, and the few kilns in operation are small in size and imperfect in construction. The greater part of all the lime used in Nova Scotia is imported from St. John, N. B. It is not necessary in this place to advert to the modes of applying lime to the soil, as they must always vary with its quality and the species of culture. Upon wet or imperfectly drained lands, the application must be large; thin and sandy soils are sufficiently impregnated with a small quantity, while fields, intended for grass, require heavy liming,—a single dressing will perform its task during a series of years.

As many crops, and especially grain crops, deprive the soil of a part of its lime, it is surprising that any of the fields of the older districts to which lime has never been directly applied, should continue to make any return to the farmer. The chief cause of sterility seen in the fine old smooth fields, and which are pronounced to be “worn out,” is the absence of lime in the soil.

The limestone of Nova Scotia may be extensively and cheaply applied to agriculture, and hereafter to it the farmer will be driven to find a stimulant for the soil ; it may, therefore, be ranked among the valuable resources of the country.

MARL.—Whenever earth, or clay, contains as much lime as will cause it to effervesce in the acids, it is called marl, the value of which for manure will always depend upon the quantity of lime present. The richest marls of Nova Scotia have been found in shallow basins, or at the bottom of peat bogs. They are chiefly of a white or yellow color, and contain the exuviae of lacustrine shell fish. The common red marls, associated with the sandstones of the same color, contain but little lime ; the effects of marl upon the soil are frequently similar to those of lime ; the lime, however, in a caustic state, neutralizes the acids, and forms compounds that are soluble in water, and readily taken up by the roots of plants. It is, therefore, in general, better adapted to the soils of Nova than the best marls.

MUSCLE MUD.—In many of the rivers, creeks, and estuaries, the shells of muscles, and other molusca, with decayed marine plants, collect in great quantities, and form valuable deposits of manure. Such collections have been called muscle mud, which, in Prince Edward's Island, is applied to the soil with great advantage. Shellfish, in a living state, are sometimes taken up with the mud, and thrown into heaps, where putrefaction takes place, and a powerful manure is the result. Besides the carbonate of lime, the shells of marine animals contain the phosphate of lime, a necessary element of the soil. Composts formed of such materials, and peat, to which quicklime may be added

if there is not animal matter enough to produce putrefaction, would afford great energy to fields that have been deteriorated by long cultivation.

SHELL SAND.—Along the sea coasts, and at the mouths of many of the rivers, the sand is composed, in part, of shells, reduced to sand by the operations of the waves. Such sand has been found applicable to clayey soils, and especially to peaty ground.

MARSH MUD.—Marine alluvium, or marsh mud, as it is usually called, consists of the fine particles of disintegrated rocks brought into the estuaries and river mouths by the tides, and which is sometimes mixed with the alluvial matter brought downwards by the descending streams. In this mixture there are always more or less marine plants in a decomposed state. These plants always impart a blue or black color to the alluvium, and form what is usually called blue marsh. Besides the ordinary constituents of common soil, the alluviums frequently contain common salt and chloride of lime. The finely divided state of the mass renders it favorable to the production of wheat and the grasses, after it has been reclaimed from the sea by the dikes, or embankments. The properties of marine alluviums vary according to the nature of the rocks whence the mineral matter is derived. The marshes bordering upon the rivers of the Basin of Minas, where the sediment is brought in from the marly red sandstones, are superior to those of Cumberland—the latter having resulted chiefly from the dilapidation of the gray grits of the coal measures.

Within a few past years marsh mud has been employed as a manure. In Kings, Hants, Colchester, and Cumberland counties, marsh mud is carted to, and spread upon, the upland, sometimes to the thickness

of four inches ; and its effects upon the crops of wheat, oats, and the grasses, are very favorable. It is most beneficially applied to thin sandy soils, which it renders retentive of moisture and invigorates with new action. It may be dug in the coldest days of winter, and is completely pulverised by the frost.

GYP SUM.—Gypsum is abundant in the middle, northern, and eastern counties. It occurs in the red sandstones, and is frequently associated with limestone. On the banks of the Avon, St. Croix, and Shubenacadie, there are mountain masses of this mineral, and its supplies are everywhere inexhaustible. Besides the variety of color and crystalline forms, there are, as in other countries, two varieties of the gypsum—the hydrous and the anhydrous, known by the quarrymen as hard and soft plaster : the latter is exported annually in great quantities to the United States, where it is calcined, ground, and extensively used to stimulate the soil. An opinion has prevailed that gypsum is of no value to the soils of Nova Scotia ; but the few experiments that have been tried with this mineral have been so imperfect that no satisfactory conclusion can be drawn from them. In the vicinity of laminated, or foliated gypsum, which constantly disintegrates before the elements, the soils frequently contain a due proportion of the sulphate of lime, and the sulphate of lime is sometimes mixed with the drift of the country. Around the rock the soil is often sterile, from the superabundance of the calcareous mineral. In such situations the application of gypsum would be useless ; but to the soils that are unimpregnated with that mineral, and which are to be found in every quarter, it might be advantageously applied. A series of careful experiments directed to

its use, are worthy the attention of agricultural societies and farmers in general. Before the gypsum is applied, it must be calcined and ground. In the powdered state its effects upon the lands of the western American States are immediate, and a dressing of it endures several croppings. It has been observed that the lands manured by gypsum, after a certain period become almost barren, and this result has been ascribed to its free use; yet, it is more probable that such lands have been impoverished by other causes, and are still capable of being renovated by the use of new stimulants and fertilisers.

When caustic lime is applied to the soil, it immediately seizes the acids present; it is therefore said to "sweeten" the land. Some of the compounds formed are soluble in water, and are therefore applicable to the tender roots of plants which are fed with lime and organic matter. The *modus operandi* of the sulphate of lime is not so manifest. It absorbs moisture and ammonia from the atmosphere, and by decomposing the saline compounds of iron and other minerals, it may not only disarm hurtful salts, but render them promoters of vegetation.* The anhydrous, or hard gypsum, differs only from the hydrous by containing less water. A mill for grinding the latter has been erected on a tributary of the Shubenacadie, by Mr. George Duncan, and the application of powdered anhydrite to the soil promises useful results.

PARING, BURNING, CALCINED CLAY.—When sward, or sods are burned, the residue consists of calcined earth and the ash of plants, which exert a beneficial influence upon vegetation. Burned clay has been extolled for manure; but in new countries where the popula-

*See Liebeg's Agricultural Chemistry, p. 64.

tion is scanty, and there is an abundance of land for tillage, the improvement of new fields will be preferred to the cultivation of old ones, by paring and burning; and the employment of vegetable and mineral manures in Nova Scotia will precede the use of fertilizing substances now carefully sought for in the densely populated countries of Europe.

WILD LANDS.

An Account of the quantity of Land granted and ungranted in the several Counties of the Province of Nova Scotia, 1849.

Counties.	Area in acres.	No. of acres granted.	No. of acres ungranted.
Annapolis, }	1,259,520	900,515	359,065
Digby, }	642,554	240,477	402,077
Lunenburg, }	473,520	376,734	99,786
Kings, }	658,156	353,991	689,165
Shelburne, }	385,000	309,000	242,344
Yarmouth, }	551,344		
Queens, }	1,456,128		
Halifax, }	775,296	1,550,411	1,346,901
Colchester, }	665,888		
Pictou, }	945,368	413,771	531,597
Cumberland, }	649,840	447,431	202,409
Hants, }	320,416	644,004	424,578
Sydney, }	748,166		
Guysborough, }			
	9,534,196	5,236,334	4,297,862

To those who are unacquainted with the system of clearing wild lands, the task of reducing the massive trees of the forest, and bringing the soil into cultivation, will appear almost hopeless. When the new settler first enters the forest, he sees his land covered with lofty trees, whose dense foliage shut out the rays of the summer's noon day sun. In winter he must

wade through deep snow, or cautiously step upon its creaking and brittle crust. Everything around him is buried in deep gloom, which is increased by the roaring of the waterfall—the dashing of some rapid stream, or the glimmering of the unruffled lake. Here the chopper plies the axe. The tender sapling, and the monarch of the forest that stood for ages, totter and fall before him; and heaps of wood, sufficient to supply the navies of the world, overspread the earth.

Lands are chopped at all seasons of the year. The prevailing mode consists in cutting the underbrush in the beginning of winter, before the snow falls deep; and the large trees in the ensuing spring, before the sap has ascended to the branches. In August, or September following, the chopping is fired, and when a “good burn” is obtained, little remains upon the land but charred logs and brands. In autumn these are drawn together by oxen, or rolled by manual labor into piles, when they are fired, and reduced to ashes. This labor is frequently performed by assembling the nearest neighbors, who assist each other in combining labor with pleasure in the rolling frolic, which usually terminates in a dance, aptly called “shaking off the charcoal.” When a young man can pile one-fourth of an acre of an afternoon, dance twenty jigs in the evening, and wait upon his partner home, he is considered fit for a “new beginner.”

Thus is the land prepared for a crop to follow the ensuing season. Choppings are sometimes made in winter and cleared off in the spring to obtain a crop the same year. In this case the wood is more difficult to cut, and the labor is consequently increased. Heaps of ashes always remain upon the soil after these

burnings. In Canada the ashes are secured from the weather in log sheds, whence they are carried to the ashery and manufactured into potash. There is not at present a potash manufactory in Nova Scotia, and all the alkali of the new settlements is lost. There can be no doubt that a few such establishments would be successful, and were the ashes of the forest preserved they would be found valuable for the old lands of the populous villages.

Lands cleared of their timber as above almost invariably yield good crops of wheat, and other grain—potatoes, and other vegetables. The cost of fitting an acre for the harrow is from £2 10s. to £4, according to the growth and quality of the timber. The highest outlay for clearing is fully paid by the first crop. In seven or eight years the stumps of the trees are sufficiently decayed to admit of being removed, and the plough may be introduced to the virgin soil. Several machines have been proposed for extracting the stumps from the earth before they are rotten, but none of them have been successful; and, like the ladies who petitioned against the use of chloroform, the backwoodsmen choose to take things in the good old way. The stump machine of Sir Henry Vere Huntley, late Governor of Prince Edward Island, promised to extract stumps in the manner the dentist dislodges teeth, but it failed in practice.

Every traveller in these provinces will be struck with the ragged appearance of forest and field borders, fields half cleared, and the slovenly appearance of the new settlements. This unsightly state of things will always exist in new countries, and where the settler and squatter prefer clearing a new piece of ground to the cultivation of land from which the timber has been removed.

The soil and climate of the Province have been unsparingly condemned by hasty travellers, and an opinion has prevailed that there is a large tract of land in the counties bordering on the Atlantic that is altogether unfit for cultivation. Experience has proved that the chief part of the whole surface may be successfully cultivated, and that much of the land is of a superior quality. The above spinal tract, which extends through the whole length of the Province, forming the high lands of the interior, embraces numerous belts of hard wood land and swelling prominences, with tillable surfaces.

The kind and size of the wood has generally been considered to form an index whereby the quality of the soil may be ascertained, but in general this guide is delusive. The soils beneath the black and yellow birch, and the larger maples, or where those trees are intermixed with the ash, hemlock, oak, and beech, have been considered to be of a superior quality. Beeches, pines, firs, and spruces, white birch and poplar, have been viewed as the occupants of inferior lands; but these trees have their favorite abodes, which depend much upon dryness and moisture, and they are far more thrifty in some situations than in others.

Whenever the original trees of the forest, of whatever kinds they are, have been felled, or destroyed by fire, a new growth of other trees succeeds them. Land cleared of its lofty pines and spruces is soon covered by poplar, larch, maples, wild cherry, &c. Sugar maple, beech and birch, are succeeded by red pine, the spruces, fir, and raspberry bushes. The original trees do not appear in the second growth; but after the second growth is removed, they spring up again.

Similar facts were observed by McKenzie as far north as the Slave Lake. If the character of the soil could be determined by the trees growing upon it, it would be necessary to know whether those trees were of primary or secondary growth. This cannot be determined, for the woods have been fired by lightning, and the carelessness of the natives for centuries past, and from time to time tract after tract has been laid waste by the devouring element.

The forest lands are covered by decayed leaves and seeds: the latter are sometimes buried deeply in the earth, but they cannot vegetate so long as the surface is shaded, and they are deprived of heat and light. The fire only destroys the seeds that lie upon the surface. Those that are situated beyond its influence spring up immediately, after the solar heat and light are let down upon them. The wild animals and birds, many of which do not destroy the germs of seeds by digestion, transport them from one place to another.* The feathered tribes were the first to establish vegetation upon the newly-formed coral reefs of the Pacific Ocean, and to them we are indebted for the dissemination of many useful grasses and berries now growing in the northern regions of the great American continent.

Usually the first crop taken from new land is wheat, which yields from 20 to 30 bushels per acre. Oats are sometimes raised upon moist ground; and upon the light sands like those of Aylesford, rye makes a profitable return. All the vegetables grow well on burnt ground, especially turnips. Small patches are frequently cleared upon the old farms for the production of the Ruta Baga, Aberdeen, and white stone varieties.

* In August, 1825, the author shot a wild pigeon in Kings County, which had its crop filled with the chaff and kernels of rice. This bird had, probably, just arrived from the Southern States.

Of all the annual plants fitted for bread, wheat is the most important. When the early inhabitants took possession of Nova Scotia, and as late as the beginning of the present century, wheat gave a sure and bountiful crop, even upon lands of a medium quality. The climate has gradually meliorated since that period, yet the crop has become less abundant and less certain. Formerly the overturned sward of good upland would produce an excellent crop. At the present time all the old lands, except the best of diked marsh, require high manuring and careful preparation to produce wheat, and the average crop has gradually decreased. A similar decline in the growth of this grain is manifest on all the old lands of the western States, many of which have ceased to produce a remunerative return. This decline in the production of wheat is distinct from its failure from the ravages of insects and the rust,—the former have been very destructive during the last four years. Whether this decline has taken place from changes in the climate, or the constant abstraction of lime from the soil, and its deterioration by repeated croppings, it is difficult to determine. From the fact that the new lands, or burnt grounds, are as productive as ever, it would appear that the falling off of the old land crops has arisen from an impoverishing system of tillage, which might be remedied by the application of more science and skill.

Winter wheat is so far a biennial, that it requires to be sowed in the autumn. Many trials of its cultivation have been made in Nova Scotia, but in general they have been without success. Evidently this does not arise from the rigour of the climate, nor the depth of the snow—the latter, on the contrary, protects the plants. The cold rains and sharp freezings that prevail after the snow has disappeared, and the heaving of the

ground by the frost, whereby the roots of the plant are exposed, seem to be the chief causes of its failure.

When sown upon good ground both winter and summer rye, make very certain and ample returns. The former should be sowed early in September, and fed down by young cattle: sheep always clip too near the roots. If the scrubby evergreens upon light soils be felled and burnt off, or pasture lands ploughed and sowed with winter rye, they will generally yield from 20 to 50 bushels per acre. These are profitable crops, and they may often be obtained with comparatively little labor. The light sands of Aylesford will yield a handsome crop of winter rye once every three or four years. The value of this grain has been underrated. If it be cut when the kernel is in a waxy state, the bread made of the flour is nearly as palatable, and quite as wholesome, as that of common wheat.

Summer rye is also well adapted to light sandy soils. Many of the old fields that formerly produced good wheat, are now, from their impoverished state, sown with summer rye. This substitution prevails as far as the western part of the State of New York. No system of cropping tends more effectually to impoverish the soil; and when it is not strengthened by manures, to render it at last absolutely sterile. An old farmer in Cumberland once told me that "one half of the people were preparing their lands for an everlasting crop of laurel and huckle berries. At first they fed upon wheat bread, and their cattle upon clover; then came Indian meal and timothy; then rye and brown top; and at last they will be obliged to live upon blue berries, without milk; and their only meat will be half-starved rabbits."

The climate and soil are well adapted for barley: both the four and two-rowed varieties may be cultivated

with profit. Barley forms an important part of the grain crop of Prince Edward's Island. Making an exception of the county of Pictou, but little of this grain is raised in Nova Scotia. It has been stated by a late writer on the Provinces, that oats are not prosperous in either of the Canadas, as the great heat of summer dries up the pannicles, and sufficient nourishment is not therefore conveyed to the ears. Oats flourish in Nova Scotia, and especially upon the wet grounds. They will yield from 20 to 40 bushels per acre, and weigh from 32 to 40 lbs. per bushel. Buckwheat also gives a good crop under ordinary circumstances. There are two kinds, the black and the brown; the former is preferred for bread, but the brown variety returns the largest crop, and will grow on thin soil.

Among the plants peculiar to America, the early *voyageurs*, discovered maize, or Indian corn, a hardy kind of which was cultivated by the original Micmacs of Nova Scotia. Indian corn had always held an inferior position among bread stuffs, until of late. The decline of wheat has promoted the cultivation of this corn; and its recent introduction into, and use in, Great Britain, have rendered it a staple article of commerce. This valuable plant has an extensive range in America, but its ripening will be uncertain at any point beyond lat. 45° north. Its ripening has not always been perfect in this Province, yet in many instances this may be traced to late and careless planting. More than ordinary attention has been paid to the growing of Indian corn since the blight in potatoes, and the result has been that in the two past years from 30 to 70 bushels of ripe corn have been produced from an acre, and its cultivation is rapidly increasing. The farmers of the western counties are most successful in raising this crop. They understand the secret of putting a shovel

full of good stable, or, what is better, pig manure, under each hill, and when they hoe it the first time they take away and replenish the upper crust around the tender stalks. Besides affording good and wholesome bread, the crop is always profitable for its contributions to the fowl-house and piggery. The stalks are also nutritious fodder for cows. The young plant is not killed by any frost that appears in May, for although the first leaves may be destroyed, vigorous shoots will rise from the centre of each stalk.

Notwithstanding hops grow well, they are only cultivated for domestic use; nearly all those employed in the breweries of Halifax and St. John are imported. Hemp might be cultivated with complete success. The trials made in growing that plant, by some of the first English settlers, were highly satisfactory. No attempts are now proposed to introduce this valuable plant to the industry of our farmers. The climate is also favorable to the growth and coating of flax. Before the manufacture of cotton cloths was brought to its present state of perfection, and the price of such cloths greatly reduced, every farmer raised his patch of flax. A visiter to almost any farm house would have to cross the bleaching flat, covered with fine linens and diapers, and he would find the kind matron seated at her wheel and distaff. The cotton spinners of Britain have driven these domestic manufactures out of use, and the attention of females has been directed to the improvement of their woollens.

The leguminous plants are prolific. Peas sown broadcast upon good ground, will yield from 15 to 30 bushels per acre, and all the garden varieties are raised to perfection. Although beans have never been extensively grown, they are a certain crop. The decline of the potato during the last three years has led to their more general cultivation.

Of all the roots used for food, the potato has stood pre-eminent. Although a native of America, it was first cultivated in Europe, and afterwards trained to a variety of climates. It was brought back to its native abode, and planted in great quantities over the whole of North America, proving itself to be the best store for the farmer, and the domestic animals that hover around him. Its rapid annual growth, productiveness, and power of resisting decay, greatly enhanced its value; and so bountifully had it contributed to the supply of food, that its sudden failure was the precursor of famine. The climate of Nova Scotia is peculiarly favorable to the growth of the potato. For variety in kind,* abundance in crop, and palatableness, the potatoes of this Province have never been excelled. The plant flourishes in every kind of soil, without manure. It grows among the ashes of the burnt ground—in the sands of the sea shore—low down in the vallies, and high up among the rocks of the mountains; but the greatest returns have been taken from rich loamy lands. The medium crop is about 200 bushels per acre; 400 bushels have been raised, and perhaps even double that quantity might be obtained from a single acre.

Since the year 1835, a disease called the dry rot, or field rot, began to infest this valuable tuber. In the summer of 1845, a disease, which many believed to be peculiar to that season, attacked both top and bottom of the plant simultaneously in Europe and America, and destroyed three-fourths of the crops of that year. The crops of 1846 and 1847 suffered in a similar manner. Famine and great distress have been the result in Ireland, and other parts of the world. The most elaborate

* NOTE.—Upwards of 50 kinds of potatoes are raised in Nova Scotia. Besides the tribes of bluenoses and blacknoses, cups and midkiffs, there are London ladics, with calicoes and pinkeyes. Many other varieties have been raised from the seed of the balls.

and scientific enquiries have been made to ascertain the cause of this disease, and to discover its remedy, but without success. Some have supposed the disease to be atmospheric ; others that it is insectile. Some able chemists suppose it to arise from an excess of moisture, or from excessive cultivation. The Indians are of the opinion that *Kesault*, or the Great Spirit, has got angry with the earth, for the wickedness of its inhabitants. This diversity of opinion is evidence of the great ignorance that prevails in regard to the nature of the blight.

Since the failure of the potato crop—which, it is hoped, will only be temporary—the ruta бага, or Swedish turnip, is more extensively cultivated than in former years, when it only occupied a small space in the kitchen garden. This root is as productive in Nova Scotia as in England, and would be found very valuable for fattening oxen and sheep, and for the support of stock during the winter. The Aberdeen, white stone, and indeed all the European varieties also thrive well. Neither the mangul wurtzel, the sugar beet, nor carrots, have been brought into field culture. Onions, parsnips, carrots, beets, cabbages, cauliflowers, cucumbers, melons, squashes, and all the culinary vegetables of Britain, are cultivated with perfect success. Broom corn is raised in the eastern American States, and manufactured into corn brooms, with which these Provinces are supplied. The plant comes to full perfection, and might be raised to supply an article, for which Nova Scotia now sends her money abroad.

A steady improvement has been made in horticulture during the last fifteen years. Apples and pears of the best kinds are grown in the western counties, especially in Hants, Kings, and Annapolis, where the price of cider does not exceed ten shillings per barrel. The

cultivation of fruit has been neglected in the eastern districts. Peaches, quinces, plums, apricots, cherries, and other fruits, grow luxuriantly in the open air. Their varieties and cultivation have been much improved by the Hon. Charles R. Prescott, of Cornwallis, the father of horticulture in the western part of the Province. This gentleman produces the Isabella grape in the open air, and from it a wine is expressed that is scarcely rivalled by the imported kinds. Besides the currants, gooseberries, and strawberries that grow wild, the English kinds have been planted, and produce bountifully. Numbers of exotic shrubs and trees have been transplanted into the Province of late, especially in the neighborhood of Halifax. In general they are thrifty, and being associated with the indigenous woods, they are highly ornamental. An improved state of the public taste is now manifest. Only a few years ago, when a traveller passed along the main post roads, he was wearied with the sight of the log house, the stump field, and the silent forest; he is now cheered by the pretty garden, the clean house yard, and the gay flowers presented at the windows, even of the humblest dwellings. Much of this owes its origin to gentlemen like the individual just mentioned, the effect of whose examples will be seen for ages after they themselves have disappeared.

In a country where the winters are long and severe, the grasses are of much importance to the farmer. The natural grasses are very numerous, and occupy all the unimproved pastures and intervalles. Many of the low grounds and wild meadows supply fodder of wild grass; they are, therefore, very advantageous to the new settler. The marshes also have their grasses; and in summer, cattle and sheep find their livings in the green herbage of the forests. Of the artificial grasses, clover,

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timothy, and brown top, are considered the most valuable. On some of the dyked marshes the former will yield from two to four tons of hay per acre. The after, or fall feed on such lands, is peculiarly valuable for fattening cattle. On the uplands the red clover is sometimes uprooted by the severity and heaving of the frost. A rotation, embracing clover, and the white and green crops, is seldom practised. Thousands of acres of pasture lands might have their value enhanced by a single ploughing, which, with the cost of fencing, would be compensated by a crop of oats, sown with clover and timothy in the spring. The highland pastures of wild grass are excellent, and in autumn they frequently return the stock of cattle and sheep that feed upon them, in high condition.

Before the failure of the potato crops, the farmers were enabled to supply the market at all seasons of the year with stall-fed beef. A great quantity of excellent manure was also secured. From the lack of the above root, the fall market is glutted with grass-fed meat, and the supply of pork has been diminished.

Farm Stock.—The first horses ever bred in Nova Scotia were those of the French, and of the old Normandy, since called the Canadian breed, a most hardy and enduring race. The American settlers brought in the American (originally English) breeds; to those were added a few animals imported direct from different parts of the United Kingdom. During the residence of His late Royal Highness the Duke of Kent in Nova Scotia, he imported several valuable stallions, and the mixed breed was much improved. Since that period, a few fine horses have been introduced by the Legislature, and some excellent horses are now seen in every part of the country. Still the whole race,

when taken together, is inferior. Many of them are small, ill-shaped, and unsound. Few farmers attend carefully to the breeding of horses; and as every householder must have "a beast," whether he can feed it or not, it is not surprising that so many crippled and half-starved quadrupeds of this kind are seen in every settlement. However inferior the animal, to the new settler a horse is invaluable. With him he draws the charred logs together, harrows down his grain, collects his firewood, carries his wheat to mill, and affords his wife the medium of associating with the scattered society of the back woods. For such objects the old Canadian breed is superior to any other.

The horned cattle are also of a mixed breed. Although they are inferior to those of England, many of them are well formed, of large size, and the beef is excellent. The breeds of cows brought to the Province by the first American settlers, were admirably adapted to a new country. They were extremely hardy, and far from being bad milkers. By the enterprise of agricultural societies and individuals, this breed has been crossed by the Durhams, Ayrshires, and other stock, and improvements in dairy husbandry are everywhere manifest. A corresponding improvement has also been made in the breed of sheep. To a better description of wool the female part of the population have applied their ingenuity and industry, and the quantity of home-made cloth has been more than doubled within the last five years. There cannot be a doubt that sheep husbandry may be rendered successful and profitable in Nova Scotia. Many of the uncultivated plains of the Province are capable of fattening sheep during the summer months. The

domestic manufactured cloths are warm and durable, and some of the handsomest varieties have become fashionable among the sporting gentry of London, and are closely imitated by English manufacturers.

The old lean, long-legged, and squealing tribe of swine has been, to a considerable degree, supplanted by Berkshires, and other breeds. The pork is excellent. Nova Scotia is evidently well fitted for dairy husbandry, and the production of fine wool; for the former, the inhabitants of Annapolis and Cumberland, are already celebrated. Much of the young stock reared in Annapolis is driven into Kings, where it is fattened for the Halifax market. The stall-fed oxen of Cornwallis are superior to any in the Province. Geese, ducks, turkeys, and dunghill fowls, are raised on almost every farm, and the markets are frequently over-supplied with poultry.

Until very lately the farming utensils used were very imperfect. The old German plough, with a wooden roller under the beam, is still adhered to by many farmers of the county of Lunenburg. The ploughs of the Acadians are of equally antique model. The harrows are also of ancient stamp. The introduction of English, Scotch, and American ploughs, has been beneficial, by improving the models of such as are manufactured in the Province. Similar remarks would apply to other implements of husbandry. At present, numbers of these articles are imported from the United States;—these are of ingenious construction, light, strong, and efficient. With an abundance of materials, every facility for manufacture, good models, and a ready demand, scarcely any attempt has ever been made in Nova Scotia to manufacture the instruments of culture upon a large scale. With

brooms, mop sticks, cheese presses, wooden clocks, &c., they are imported from Boston, and other American ports. I have already adverted to the constant emigration of our young and hardy mechanics to those places, and many of whom are engaged in the manufacture of wooden articles that are sent back to the remaining population, and sold at a profit. It is in vain to say that our trades and industry have been protected more than our fisheries, where our American neighbors have found mines of wealth.

Garden seeds are as easily raised and ripened in Nova Scotia as in any other part of the world, yet the annual supply for Nova Scotia, with the seeds of clover, and other grasses, are imported. Many of them are brought in from the United States, having been put up at the neat establishments of the shaking quakers in Massachusetts.

Expenses and Profits of Crops.—It is difficult to obtain the actual expenses and profits of crops taken in regular rotation. Although liable to some variations, the price of labor during the seasons of planting and harvesting, may be estimated as follows:—For a man per day, including board and lodging, 4s. ; for a yoke of oxen, 2s. 6d. ; for a horse, 2s. 6d.

Cost of cultivating an acre of Indian corn—

Ploughing,	-	-	-	£0	7	6
Manuring 16 loads—half the manure to	}	be charged to the crop—8 loads, at	2s. 6d.	1	0	0
Carting manure,	-	-	-	0	10	0
Planting, 6s. 3d., Seed, 1s. 3d.,	-	-	-	0	7	6
Hoeing three times,	-	-	-	0	17	6
Gathering and husking,	-	-	-	0	15	0
Interest on land, at £10 per acre,	-	-	-	0	12	0
				<hr/>		
				£4 9 6		

Product—

Corn-stalks for fodder, value,	-	-	£1	0	0,
Average crop of corn, 40 bushels, at 5s.,	10	0	0,		
			£11	0	0

Profit on corn,	-	-	6	10	6
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Estimated expenses for an acre of potatoes—

Ploughing,	-	-	£0	7	6
Manuring, 20s.,—hoeing, 20s.,	-	-	2	0	0,
Seed, 12 bushels, at 2s.,	-	-	1	4	0
Digging, 60s.,—Interest on land, 12s.,	-	-	3	12	0
			£7	3	6

Medium product—

250 bushels, at 1s. 6d. per bushel,*	18	15	0
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Profit on potatoes,	-	-	£11	11	6
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Estimated expenses of an acre of Ruta Baga—

20 loads manure, half charged to crop,	£2	10	0
Preparing ground and planting,	1	10	0
Seed, 4s., hoeing 40s., harvesting, 45s.,	4	9	0
Rent of land, 15s.,	0	15	0
	9	4	0

Product—

800 bushels, at 9d. per bushel,	26	13	4
	£17	9	4

Estimated expenses of an acre of oats—

Ploughing and harrowing,	-	-	0	12	6
3 bushels of Seed, at 2s. 6d.,	-	-	0	7	6
Cradling and binding,	-	-	0	7	6
Carting, &c., 4s.; threshing, 8s.,	-	-	0	12	0
Interest on land,	-	-	0	12	0
			£2	11	6

Product—

40 bushels, at 2s. 6d.,	£5	0	0	
Straw equivalent to threshing,	0	8	6—5	8 0
				<hr/>
Profit.	-	-	£2	16 6

* This is taken as a medium price. Since the appearance of the blight, the product has been diminished, and the price proportionably increased.

Estimated expenses of an acre of wheat—

Ploughing and harrowing, - - -	0	10	0
Seed, 16s., harvesting and threshing, 25s.,	2	1	0
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	£2	11	0

Product—

20 bushels, at 8s, - - -	8	0	0
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Profit, - - -	£5	9	0

To promote practical, scientific, and successful agriculture, it is necessary to convey to every farmer a knowledge of the elements to which his industry is applied, but which, at present, is beyond his reach. For this object, an Agricultural Chemistry Association has recently been formed in England, and in Ireland a Chemico-Agricultural Association. Such also were the views of the late John Young, Esquire, the Agricola of Nova Scotia. At present, our farmers have nothing to guide them but the practices of their forefathers, and what they term their own experience—an experience not derived from careful observation and experiment, but often hastily embraced in ignorance of cause and effect. Such experience is of little value, for no experiment in chemistry or agriculture can lead to any useful result, except by chance, that is not conducted under an acquaintance with the materials employed.

An agricultural laboratory, managed by a practical chemist, would require but a moderate share of legislative aid. In such an establishment the minerals, limestones, marls, and the various soils and manures, together with the constituents of the most valuable vegetable productions, upon the payment of a small fee, might be accurately analysed, and the farmer would have access to every report connected with his

industry. Scientific researches might be entered upon, and a series of lectures delivered in every section of the Province, for which the winter months offer an appropriate season. From such offices the farmer would derive incalculable benefits. The Scotch Association, which has been in operation many years, has returned to its promoters, by the diffusion of useful knowledge, an ample reward for their zeal and patriotism. The demand for, and the employment of, manures, with which farmers cannot be acquainted, render the labors of the professional chemist extremely necessary. With the same end in view, agricultural surveys have been made from year to year of the States within the borders of the neighboring republic, and the information and encouragement conveyed in the reports that have followed, and have been widely circulated by their Legislatures, have quickened the pace of agricultural improvement. The chemical or analytical establishment alluded to, might be advantageously connected with an experimental farm, which, besides a trial of different kinds of culture, might have some experiments devoted to our own and foreign varieties of plants.

That the Agricultural Societies in the different counties of the Province have been in some degree beneficial to the farming interests, and especially to the improvement of the breeds of domestic animals, there can be no doubt; but not more than one farmer in ten has been induced to enrol himself; and when party and political feelings are not the causes of their remaining aloof, they generally believe that the kind of information best calculated to aid them, is not to be obtained through such channels. True it is that the spirit of inquiry slumbers in their bosoms, and

they choose to tread the old beaten track of their fathers, rather than avail themselves of modern discoveries.

The agriculture of Nova Scotia has been depressed by the lack of markets and facilities for transportation. There are no public works, nor manufactories to promote the local consumption of agricultural produce. The requirements of the City of Halifax, and the small inland and sea-board towns, are altogether inadequate to the supply afforded by the agricultural surface, which might be rendered capable of yielding exports of bread stuffs. There are no railways, nor canals, and the cost of transporting the produce of the farmer paralyses his energies. These causes alone have induced many of our hardy yeomanry to emigrate to the United States, where they find brisk markets, and a cheap transport for the produce of their labor. Unfortunately, jealousies have arisen between the commercial, fishing, and agricultural interests, and local prejudices find their way into the halls of legislation. Principles of free, rather than of reciprocal trade, have been acted upon, even in the still infant state of the colony. To these evils have been added endless party bickerings, and a thirst for places of ease, emolument, and power. The advocates for general and practical enterprise have been swept away in the overwhelming current of agitation, and the energies of the most useful men have faded before the altar of popular bigotry. The remedies for this untoward state of things are as manifest as the evils themselves; and to those who will now successfully apply them, the gratitude of the country will be ever justly due.

CHAPTER VII.

Manufactories, Commerce, and Industry—Timber Trade—Lumbering—Shipbuilding—Population and Commerce of British America—General Remarks—Table of Exports from Nova Scotia, for year ending 5th January, 1849.

MANUFACTORIES.

The manufactories of Nova Scotia have been chiefly confined to the simple operations of sawing wood into deals, boards, laths, and shingles, which are shipped to Great Britain and the West Indies. Excellent flour mills have been erected in the neighbourhood of Halifax, Liverpool, and Annapolis, for the manufacture of flour from foreign grain; but their operations are unsteady, being always affected by the fluctuations of commerce, and a non-protective tariff. The numerous grist mills in the country villages are only employed in grinding the grain raised in the Province for the domestic supply, and they are usually very imperfect in their construction. In all the western counties there is a lack of oatmills. Many of those that were erected under the bounty of the Legislature, were suffered to fall into decay as soon as that bounty was received by their proprietors.

The distilleries and tanneries in the vicinity of the capital are not in brisk operation. Some of the former have been closed in consequence of the high duty levied upon their productions, and the admission of foreign spirits.

Tanning is often conducted by the farmers themselves ; yet, there are small tanneries in every county, and the trade is frequently combined with shoemaking.

Excellent castings are made at the iron foundries of Halifax, but all the iron employed is imported from Great Britain, notwithstanding the Province abounds in the best varieties of the ore.

A pail manufactory was recently established on the Truro road, twelve miles from the city of Halifax, and large supplies of its productions have been sent to different parts of the Province. Small potteries have been successful. The United States market is supplied with grindstones from the county of Cumberland. The grindstones of the bank quarry at Minudie, owned by Amos Seaman, Esq., are superior to any others ever discovered on the continent of America. Other manufactories have been attempted in the Province, but they have so far been unsuccessful—a circumstance that may be ascribed to the high price of labor, and the want of sufficient capital to bring each operation to perfection.

Carding machines have been introduced from the United States within the last twenty years. They are now in general use throughout the country, and have been a great relief to the labor of making home-made cloth, and fully compensate their owners. A clothing mill at the head of Bedford Basin has produced some excellent blankets from the common wool of the country. The improved manufacture of home-made woollens has been already adverted to. The general use of this kind of cloth has effected a great saving to the inhabitants, who formerly paid high prices for British woollens. Besides the plaids, checks, and grays, in common wearing, a quantity of cloth and hosiery is supplied to seamen and the fisheries. Straw hats, of domestic manufacture, are in common use among some of the farmers,

and a few superior straw bonnets are made in the western counties.

It may be admitted that the productions of the different tradesmen are well and substantially made; yet they ordinarily lack lightness, finish, and the ingenuity peculiar to articles manufactured in the United States, to which a great many of our best mechanics emigrate annually. Numbers of waggons, and other kinds of carriages, farming utensils, wooden clocks, and household furniture of every description, are annually imported from Boston, and other American ports. They at once recommend themselves, and are purchased at high prices, in preference to any made by the mechanics of the country. The consequences of this state of things are obvious, and will soon materially diminish the use of British manufactured goods. No general effort has been made to encourage our own manufactures in preference to those of a foreign power, which, by heavy duties, exclude almost all our productions, except coal, gypsum, and other articles that they cannot obtain from any other quarter.

It is a reproach to these British Provinces, that besides immense supplies of bread stuffs, they import from the United States numerous articles that might be as cheaply manufactured within their own boundaries as in any other part of the world. Pig iron is imported from Great Britain into the American Union, cast into stoves, and then sent to Nova Scotia and New Brunswick for sale. The cordwood of Nova Scotia is fashioned into wheel heads, clothes pins, &c., and then returned and sold at a profit. We might here enumerate other articles for which we supply the crude materials, and receive in return the finished work of the artizan—the true “Yankee notion.” That any new country, however great its resources, can prosper under such a state

of commerce and manufacture, is impossible. A contrary system has characterized the success of the American Republic.

Maple Sugar.—Small quantities of maple sugar are manufactured in the new settlements. A few families have each produced a ton in a single season. The process of manufacture consists in puncturing the *Acer Sacharinum*, or sugar maple, in the spring, with an axe, or an auger, draining off the sap by small spouts into wooden troughs, and then evaporating it in boilers. This sugar may be made as white and as lively as any from the tropical climates. The kind usually made is sold in small brown cakes. The sap also affords a delicious syrup, and the “last run” makes excellent vinegar. The Americans have begun to plant the maple; and “sugar orchards” are beginning to spring up. The majestic forests of Nova Scotia, and especially those of the Cobequid Mountains, would yield, under proper management, an important supply of sugar. Charcoal is made for the use of the country blacksmiths only.

Bricks, soap, candles, ale, and beer, are made at Halifax, but not in quantities sufficient to supply the demand. The manufacture of linseed oil and potash, which has been successful in Canada, has scarcely been attempted; nor is there a single paper mill in operation. There can be little doubt that industry would be more profitably employed in manufacture than in collecting timber, or in the fisheries, in which to every prize there are many blanks. It would be at variance with the present design to shew the beneficial results that would follow a transfer of the labor required by the timber trade to agriculture.

COMMERCE AND INDUSTRY.

I have already noticed the industry applied to agriculture, the fisheries, and other pursuits, and by the annexed tables a tolerably correct estimate may be formed of the amount of labor applied to each of them. Lumbering, as it is called, still remains to be noticed. In the early settlement of the Province, the districts now covered with fine cultivated fields, and the banks of the rivers and minor streams, were covered with different members of the pine tribe, or groves of marketable hard wood. Most of these have been felled, and consumed by fire in clearing the land, or they have been shipped to Great Britain and the West Indies. Timber is now obtained at far greater expense than formerly, and the prices received for it do not remunerate the lumbermen for their privations, labor, and risk. In the best of times, the actual hewer, or sawer of the wood, was not the gainer, and the fluctuations in the demand, and prices have allowed but few timber merchants to enrich themselves, while bankruptcies have been frequent among them.

The timber trade has drawn the labor away from agriculture. Thousands of farms have been abandoned or neglected. By it, habits of unsteadiness and intemperance have been induced among a part of the laboring population; and up to the present time, many families are depending upon the falling of showers of rain to float the wood rolled into the streams, or to set the saw mill in motion, whereby they obtain their subsistence, rather than from the produce of the soil. In the neighbourhood of sea ports, fine farms have been deserted and turned out to common; and instead of stacks of hay and grain, the dilapidated buildings are surrounded by

piles of the shavings of shingles and hoop poles, the result of the means by which the proprietors obtain a scanty supply of the necessities of life. Who are the most independent men in the Province? Who are they that live most comfortably, and enjoy the highest degree of civilization? They are the farmers—a class of men who never meddled with either lumbering or fishing, but devote all their energies to the tillage of the soil.

The different kinds of wood have been described in a former chapter. The felling, hewing, sawing, and rafting of timber, are simple operations, performed either by parties of men sent out by the merchants, or by persons who collect logs, timber, and sawed wood, on their own account. Late in the autumn, or early part of winter, parties are despatched to the woods, with a supply of provisions, axes, horses, or oxen, and everything necessary for the enterprise. Hay is often transported at a great expense, or the animals employed are fed upon oats, or Indian corn. A rude camp and hovel are soon erected, and covered with the bark of trees. The men commence felling and hewing the pine, or collecting sawmill logs, which are rolled into the nearest stream to await the freshets of the ensuing spring, when they are transported downwards to the mills.

As soon as the snow disappears in the spring, the logs and timber in single pieces are floated over cataracts, rocks, shoals, and almost every natural impediment, to their places of destination. This stream-driving, as it is called, is the most unhealthy part of the "lumberers'" labor, and often induces fatal consumption, or rheumatism, by which numbers are disabled. Nor are accidents unfrequent in the felling of the trees. This labor had long been supposed to call for the use of ardent spirits, which were used very freely, until the

influence of temperance societies began to be extended even to the wild woods.

Lumbering is also carried on by many persons in the new settlements ; and mills that propel a single saw, are found upon almost every stream in the Province. Nor is it rare to find fishing, farming, and lumbering, pursued by the same individual and his family. When these occupations are combined, they are seldom profitable ; agriculture is always neglected, extravagance and slovenliness are the frequent attendants, and ruin the sequel of the mixed enterprise. It may be considered fortunate for the Province that the timber is yearly growing more scarce upon the borders of the settled districts ; and of late many lumbermen have been compelled to till the soil in order to win a maintenance for their families.

The flourishing state of the timber trade arose from the high duties imposed on Baltic timber. In 1791 the duty on Baltic timber was only 6s. 8d per load ; that duty was gradually increased, and in 1812 it amounted £2 14s. 8d. per load. In 1820 it was £3 5s. per load, but in 1821 it was reduced to £2 15s. per load, and for the first time a duty of 10s. per load was laid upon American timber imported into Great Britain. By the financial system of Sir Robert Peel, introduced into Parliament in 1844, it was proposed to reduce the duty on foreign wood to 30s., on squared timber, and 35s. per load on deals, according to their cubic contents ; and after one year to make a further reduction to 25s. and 30s. respectively, and to levy 1s. a load on timber, and 2s. a load on Colonial deals. Against this measure there were strong remonstrances, and a change was effected in favor of Colonial timber and deals. It cannot be supposed that the British consumer will much longer pay a higher price for his timber than it can be

supplied for, if the duties on foreign timber were removed; consequently the trade in this article, so long enjoyed by these Colonies, will be rendered more and more precarious.

The advantages that have arisen from the timber trade consist in the facilities afforded to emigration, and the training of a great number of seamen, which, in the event of war, would man a powerful navy. It has also, perhaps, opened the way to many excellent tracts of land in the interior country. To the Provinces of Nova Scotia and New Brunswick, this trade has not been profitable under the greatest amount of protection; but by drawing away great numbers of the active part of the population to the back woods, agriculture has languished, and the general prosperity of the country has been retarded. Nor has the employment afforded by it either improved the morals, or the circumstances of the community in general. The produce of a single coal mine in the county of Pictou has contributed more to the revenue of Nova Scotia than all the forests of the whole Province.

Shipbuilding has long been a valuable branch of industry. It has been pursued with much spirit, and in many instances with profit. The numerous sites, presented everywhere—the abundance of wood, and the demand for ships required for the transportation of timber, deals, railway sleepers, &c. to the old country, have rendered Nova Scotia a shipbuilding Province. Such vessels as are now built under proper inspection, are equal in strength and model to any ever launched. But the British market has been overstocked, and its fluctuations have been increased by the present disturbed state of the European Powers.

Mining scarcely forms a part of Provincial labor, for it is conducted solely by the General Mining Association

of London, who employ miners from the Mother Country. This subject will be fully entered upon in another chapter. Large exports of gypsum are made annually to the United States. The trade occupies a number of quarrymen, some of whom have dug holes in the banks of the Shubenacadie a hundred feet up the sides of the perpendicular cliffs. From the low price of the mineral, these men seldom obtain more than an ordinary livelihood. Plaister is so abundant that it only requires to be blasted and broken up, when it is frequently shipped directly from the site of the quarry. The Americans effectually prevent the importation into their country of manufactured or calcined and ground gypsum, by laying a high duty on the article. The labor of the Novascotian is therefore confined to shipping the crude material.

The British North American Colonies have always been remarkable for sudden and frequently ruinous depressions in their trade, according as the acts of Parliament, or their own Legislatures, have been favorable to their commerce. Except for the fisheries, bounties and prohibitions now appear to be unnecessary; but protecting duties are required for the encouragement of Colonial industry. Nova Scotia abounds in the elements of manufactures, and with her inexhaustible supplies of coal and iron, her facilities for propelling machinery, and an agricultural surface capable of supporting a dense population, her advantages excel those of any of the eastern States of the American Union; but her industry must be cherished and protected, or her active sons will continue to leave her shores and seek foreign employment. It is in vain to suppose that a free trade system will be beneficial to a new and struggling colony,

which has nothing to export but raw materials; it is rather calculated to enrich an old commonwealth, whose people by their skill and labor make such raw materials valuable, and then return them for consumption. The result of the system alluded to has been that the suppliers of the raw material at last become hewers of wood and drawers of water to the manufacturers.

At the present moment the Americans take from us gypsum, grindstones, and other unmanufactured articles, (agricultural produce excepted,) at a low, or almost nominal duty. They have recently reduced the duty on coals one half, because they require the article at our hands to maintain their manufactories and steam navigation; but if our plaister be calcined and ground—if we even polish our grindstones, which are now cut over by themselves—we are told distinctly that we shall not manufacture for them, and upon every article thus manufactured by us they levy a duty of from 20 to 30 per cent. Nova Scotia, on the other hand, receives the manufactures of the United States at a low rate of duty. The consequences of such a state of commerce have been rendered manifest by the almost utter destruction of our infant manufactories, and the emigration of our tradesmen. Certainly this is not a free trade, nor a reciprocal trade, of late so much boasted of; and if it be continued, its consequences will not be less fatal to the interests of Nova Scotia, than the admission of slave-grown sugar into Britain, in competition with that produced by paid labor, has been to the prosperity of the British West Indies.

It is evidently to the interest of Great Britain to cherish her transatlantic possessions. The shipping between the parent country and her colonies, at present

exceeds the aggregate foreign shipping of Great Britain with the whole of Europe. The population of Canada, New Brunswick, and Nova Scotia, in 1841, was 1,300,000. The immigration into those colonies has since averaged 50,000 per annum. The united population may now be estimated at 2,000,000. The total value of imports is equal to £4,000,000, and the exports upwards of £3,000,000. The navigation of the Atlantic by steam has already effected a favorable change; and the results that would follow the opening of a railway between Halifax and Quebec can scarcely be too highly estimated. Besides these, to render the prosperity of the Provinces permanent, and to make them a still brighter gem in the British Crown, their commerce and infant manufactories must be protected, their fisheries kept free from foreign aggression, and their agricultural and mineral resources opened to the application of extensive industry.

HUNTING, SPORTING, &c.

When Nova Scotia was first inhabited, the produce of the chase, shooting and trapping were considered valuable resources, as in reality they afforded food, furs, and feathers. Formerly the teeth of the walrus, or sea cow, furs, and the skins of the moose and cariboo, were articles of export; but the clearing of wild lands, the introduction of agriculture, and the relentless war waged against the native animals of every kind have reduced their numbers so low, that hunting can no longer be pursued with profit. Excepting the backwoodsman, and the Indian, few of the inhabi-

tants are disposed to leave their ordinary occupations in search of game, unless it be here and there a descendant of the old New England stock, or some officer of the garrison, who delights to carry away a pair of horns, or heels captured in the wilds of America.

When British settlers first began to immigrate into the Province, game of all kinds were plenty. The rivers and lakes were alive with ducks and teal—the woods with partridges, and the marshes with plover. Moose were killed in great numbers, and venison was the only kind of flesh consumed by many families. There was then a wanton and wasteful destruction of the giants of the forest. Thousands were shot down for the sake of their skins ; and up to the present time the flesh is often left to putrify, or to be devoured by the carnivorous races.

The practice of hunting the elk with packs of dogs when the snow is deep, is very destructive. The Indians have petitioned the Legislature for the enactment of a law to prevent this mode of hunting the moose, by which they will soon disappear altogether, and the Micmacs be deprived of the food they have always considered to be their own. Without a protecting law, assailed at all points and at every season of the year, it is remarkable that any of these noble animals have survived ; but they are still to be found in all the remote uninhabited districts, and frequently they not only approach the settlements, but emerge from the woods into the cultivated fields, and during the rutting season they frequently cross from one line of forest to another, regardless of every danger. Notwithstanding their fleetness, in like manner have the reindeer, or cariboo been destroyed.

Moose are frequently killed in the month of September. The hunter enters the deep recesses of the forest, and imitates their lowing in what is termed the "moose-call." The unsuspecting creature approaches the fatal spot, and is shot down. The exploit is considered by many an ample requital for roosting in a tree day and night, or concealment in a coppice, where speaking and all movement are strictly interdicted. Even under such circumstances the hand of the amateur trembles at the sight of a pair of broad antlers, and the mammoth of the wilderness gallops off unhurt.

In winter these animals form what is called a yard; which is merely a tract of ground upon which they feed, and beat down the deep snow while browsing upon the evergreen herbage. In such a yard they will remain all winter if not disturbed. Their great weight prevents them from travelling over deep snows, and when they are covered by a crust of ice the animal seldom escapes from a persevering chase.

With moccasins and snow shoes, the hunter enters the yard and shoots the harmless herd. If any attempt to escape, they are followed and cut down with the tomahawk, or axe. This is a barbarous amusement, or savage butchery, from which a true sportsman would turn away in disgust. Indeed the gallantry of the work scarcely exceeds that of entering a farm yard and slaying a drove of cows.* In light snow, when

*I once followed an old female moose through the snow until she plunged into a drift and lay quite exhausted. The tongue projected from the mouth, the eye-balls were ready to burst their sockets, the muffle was distended, and the limbs almost paralyzed. It was with difficulty I could prevent an Indian, who accompanied me, from slaying the helpless creature. The flesh could not have been transported to the far-off settlement. We waited until the old cow rose and moved off, when the Micmac exclaimed, "Englishman sometimes big

the animal can travel, the hunter pursues him in perfect silence. The Indians are remarkably cunning upon a moose-walk, and creep upon their prey with the subtlety of serpents.

The moose is not a fleet animal ; he has a shambling gait like an ox. During the chase he will frequently turn upon the dogs, take them up on his horns, and toss them into the air. He frequently weighs 1000 lbs., and the largest even 1500 lbs. The flesh is excellent food, and the muffle, or loose muscular covering of the nose, is considered a dainty.

The reindeer, or cariboo, seldom exceeds 400 lbs. in weight. It is a fleet animal, yet in deep snows it is overtaken by men and dogs. Drove of cariboo are sometimes seen sporting upon the mossy bogs of the interior. The flesh is far less palatable than moose venison. The Virginian deer, (*cervus Virginianus*,) common in New Brunswick, is not seen in Nova Scotia.

The beaver have all been destroyed. Foxes, martins, and other small animals, are hunted and trapped for their furs. Bounties are given for the destruction of the wolf, bear, and lynx, or wild cat. A bear hunt sometimes affords capital sport. Bruin will often walk off with half a dozen balls, and he fights well to the last.

There is still some good goose and duck shooting in the unfrequented rivers during the month of April. Pigeons have not been numerous of late, and the hardy partridge has begun to decline in the older settlements. Woodcock are on the increase. Twenty

fool ; he hunt great deal for get fun—he freeze ear and freeze toe, and when he catch moose he make bumblee be, which all same one humbug."

years ago it was rare to flush a single cock ; they now breed in every part of the Province, and begin to afford some fine sport. Snipe are numerous on some of the intervalles—the borders of the great marshes, and in the alder swamps. Plover of different kinds are very plentiful in some situations during the month of September, and the great Esquimaux curlew is occasionally seen on the shores.

To the man of leisure and the sportsman, Nova Scotia offers all that is desirable. Angling may be pursued successfully during the spring and summer months. The game in autumn is sufficiently plenty to keep the sportsmen upon the *qui vive* ; and in winter he may follow the moose upon snow-shoes “over the hills and far away” for whole days, enjoying the hope and expectation of “getting a chance.” The scenery of the country is beautiful. There are no game laws, and the inhabitants are universally hospitable and obliging.



CHAPTER VIII.

Geology of Nova Scotia—Classification of Rocks—Granitic Rocks—Stratified non-fossiliferous, or Cambrian Group—Silurian Group—Old Red Sandstone—Carboniferous Rocks, or coal formation—Extent and division of the Group—Gypsiferous Strata and Limestones—Fossils of the Coal Group—New Red Sandstone—Intrusive, or Igneous Rocks—Drift.

Of all the resources of Nova Scotia, there are, perhaps, none of greater value and importance to the permanent welfare of the country than those of the mineral kingdom. But, from their nature and situation, they are the most difficult to discover and bring into operation. Timber may be felled—fish may be taken, cured, and shipped, and vegetables may be cultivated, by solitary individual industry, and almost without the aid of science, or capital: hence it is that the most common natural objects of a new country afford its first exports. Not so with mineral productions;—their discovery—their removal from their native situations, and their application to useful purposes, require science, skill, and the outlay of great capital.

From the first discovery of Acadia, or Nova Scotia, up to the present time, the mineral productions of the Province have been considered of great value. During the first voyage of DeMonts into the Bay of Fundy, in 1604, he found native copper at Cape D'Or, and amethysts, with other gems, at Parrsboro' and Cape Blomidon. One of these gems was placed in the Crown of the King of France. It was erroneously supposed that

gold and silver had their existence here. The name of the headland, Cape D'Or, is still retained. After the final conquest of Acadia, the most extensive reservations were made of the minerals to the British Crown, in almost all the grants of land, and not only of the precious metals, but also of coal and the common ores. The exercise of the Royal prerogative in the reservation of the mines and minerals of Nova Scotia, has retarded discoveries by the inhabitants, and checked that kind of inquiry which has been so beneficial to neighbouring colonies.

There is less known of the geology of Nova Scotia than of any of the bordering Provinces, or the United States. The latter have been submitted to public surveys and explorations. Geological inquiries in Nova Scotia have heretofore only been stimulated by the love of science, or the gratification of curiosity. They have never been aided, nor encouraged by the Government, from the supposition that the discovery of mineral wealth would be of little public benefit, so long as the exclusive right of mining is in the hands of those who derive their privilege from the Crown. But separate from any mining advantages, a geological survey would amply repay its outlay by the benefits it would return to agriculture. The discovery and application of limestone, marls, and other fertilizing substances—useful rocks and salts—the analysis of the different soils, and even a topographical description of the country, would be scarcely less valuable than mines of ores and coal.

The number and variety of the minerals of Nova Scotia, have, of late, attracted the attention of foreigners, by whom they are now eagerly sought for to form a part of the museums of colleges, and other public institutions. Among the early collectors of the minerals, Solomon Thayer, Esq., may be mentioned. Specimens

collected in Nova Scotia, and described by that gentleman, are noticed in Cleveland's Mineralogy, as early as 1822. Messrs. Jackson and Alger, of Boston, published some remarks on the geology and mineralogy of Nova Scotia in 1832 : they related chiefly to the minerals of the trap rocks skirting the Bay of Fundy. Halliburton's history of Nova Scotia contains a brief notice of the geology of a part of the Eastern shores and Cape Breton, by Messrs. Smith and Brown. In 1836 the author published his remarks on the Geology and Mineralogy of Nova Scotia. His work has been generally perused* ; and Sir Charles Lyell's travels in America give an interesting account of the coal formation, and the fossils of the group.

Several geologists from England and the United States, among whom have been Professors Emmons and Hopkins, Mr. Logan, and Sir Charles Lyell, have visited different parts of the Province. The difference of opinion expressed in the communications of some of those gentlemen in reference to the relative age of certain rocks, is accounted for by the haste of their tours, and the limited areas that fell under their observation. The theories and plagiarisms that have been put forth by amateurs, are objects of amusement rather than of criticism.

The surface of Nova Scotia is beautifully variegated by hill and valley. The steep escarpments, deep ravines, and mural cliffs, give some districts an alpine appearance ; still there are no mountains in Nova Scotia proper that exceed 1000 feet in height. The shores of the Bay of Fundy, Atlantic, and Straits of Canseau, are frequently bold, rocky, and precipitous ; but the coast bordering on the Northumberland channel is low, and

* A new edition of this publication, embracing the discoveries made subsequent to its date, is now called for.

consequently the scenery is tame. Along the courses of the rivers there are large tracts of salt marsh, (marine alluvium;) and in those that empty into the Bay of Fundy, the tides rise to the height of fifty, and even seventy-five, feet. The currents produced by this great elevation of the sea, exceed in rapidity any other in the world.

The surface is furrowed by parallel mounds, extending from the south-west towards the north east, and parallel to the Atlantic coast. This is also the general direction of the strata throughout the whole region of North America, including the ranges of the Alleghanies. My object in this chapter will be to give such a brief sketch of the geology of Nova Scotia as shall aid in the development of her industrial resources. A full illustration of this subject would require a volume.

For the purposes of description, I have divided the rocks of the Province into eight different groups, or formations. A communication I made to the Geological Society of London, in 1843, was accompanied by a geological map, illustrating the situations of these groups, so far as discoveries had then been made. The map was published by the Society in their proceedings Vol. IV. Part I. A similar description was also published in the London Mining Journal, in April, 1845. That map has been the guide to subsequent observations. Further examinations and discoveries have modified the arrangement of the rocky strata, as then published; and I have since been induced to classify the gypsiferous deposits with the coal series. The geology of Nova Scotia may therefore be represented in the following manner:—

1st. *Granitic, or hypogene Rocks*.—Extending along the south side, and throughout the entire length of the Province, from Cape Canseau to the interior of Yar-

mouth, there is a somewhat elevated tract, consisting of granite, sienite, porphyry, and trap. Detached ridges of these rocks also occur in the hills southward of Annapolis and Cornwallis. At Shelburne, and between Halifax and Cape Canseau, they again reach the seaboard. They also form the central portion of the Cobequid Mountains, which extend from Cape Chignecto, in Cumberland, to the high lands west of Tatamagouche, and River John, on the opposite side of the peninsula. Their height seldom exceeds 600 feet above the level of the sea. These granitic and trappean masses send off numerous dikes and irregular veins into the rocks incumbent on them. From their unyielding nature, they contribute to the formation of soil very slowly, and the districts they occupy have a rugged and forbidding aspect, although they are not without some fertile and tillable surface, especially along the courses of the river valleys.

2nd. *Stratified non-fossiliferous Rocks, or Cambrian Group.*—Taking the stratified rocks in ascending order, and commencing with those of the highest antiquity, we find extensive belts of hornblende slate, chlorite slate, clay slate, grauwacke and grauwacke slate, and quartzite, succeeding the granite and its associates, and with them occupying almost the whole of the Atlantic side of the Province. They form the southern hills of Annapolis, Kings, and Hants counties. Bending to the southward at the Avon, they stretch away southward to Halifax, and eastward to the higher lands of Pictou and Guysboro'. They also occupy a portion of Cape Breton Island and the flanks of the Cobequid Mountain. They are characterised by the before-mentioned long parallel ridges, and wherever the rocks are covered by detrital beds of sand and gravel, their surfaces are capable of successful cultivation. The strata are always highly

inclined, and frequently perpendicular. No fossil remains have ever been found in these metamorphic masses; and at several places where they meet the granite, they are evidently metalliferous. A belt of clay state extends from one extremity of the Province to the other. Its average height is about 700 feet.

3d. *Silurian Group*.—The stratified non-fossiliferous rocks are succeeded by clay slate, grauwacke and grauwacke slate, containing fossils of Silurian character. The lowest of these deposits where they cease to afford organic remains, may be regarded as being Cambrian. A narrow zone of Silurian beds appears along the flanks of the Cobequid hills;—these, and the non-fossiliferous beds of the Province generally, dip away from the adjacent granitic and sienitic ridges, at angles of high elevation. The fossils of this group agree with those of the Silurian rocks of Europe, the United States, Canada, and New Brunswick. They are chiefly *encrinurites*, *trilobites*, and varieties of the *orthoceras*, *spirifer*, *orthis*, and *leptæna*. The formation contains valuable beds of iron ore, which appear at Moose River and Nictau, in the County of Annapolis; at McLellan's Mountain, in the county of Pictou, and a few intermediate places. The great deposit of iron ore of the Cobequid highlands, is probably within the limits of this group. The principal sites of the fossils are at Moose River, Horton, Nictau, Windsor, and Pictou.

4th. *Old Red Sandstone, or Devonian Group*.—Above the Silurian strata, there occur thick beds of conglomerate, bright red, and micaceous sandstones,—red shale and marly clay. At Advocate Harbour, Parrsboro', Moose River, Horton, Shubenacadie, and other places, these rocks are seen dipping beneath the coal measures and gypsiferous red sandstones. The scales of fishes, and other organic remains, found in these

deposits, are too scanty and imperfect to afford conclusive evidence of their relative age; but from a joint consideration of them, the mineral character of the formation, and its position, it may be classed as the equivalent of the old red sandstone of Europe, or a part of the great carboniferous series. The strata contain but few minerals of importance.

5th. Carboniferous Rocks, or Coal Formation.—

Whether the coal measures of Nova Scotia are all contained in one continuous field, or in separate troughs, or basins, is a point which has never been satisfactorily established, as no general survey of them has ever been undertaken. In making the geological survey of New Brunswick, I discovered that the coal field of that Province occupies an area of 8,000 square miles. The field extends across the Province line into Nova Scotia, where the rocks of the carboniferous system prevail to the extent of at least 2,000 square miles. The united coal fields of the two Provinces, not including Cape Breton, may therefore be estimated to embrace an area of 10,000 square miles!!! and I am of opinion, that they are all parts of one uninterrupted tract, which, in Nova Scotia, is stretched along the flanks of all the highlands that overlook the estuaries of the northern and eastern parts of the Province.

The coal district reaches from Chignecto Bay, in the county of Cumberland, along the north side of the peninsula to Northumberland Strait, and thence to the Gut of Canseau. It is seen at Lower Horton, Falmouth, and Windsor, and runs thence along the south side of Minas Basin, across the valley of the Shubenacadie, along the northern side of Musquodoboit, embracing the valley of the Stewiacke and Gay's River, to the eastern shores, and crossing the Strait of Canseau, the same tract comprehends a part of Cape Breton, where coal

is abundant. Coal measures also skirt the northern shores of Minas Basin; and extending on a line nearly parallel to the Cobequid Mountains, they range eastward to Pictou. The Gulph shores of the Province belong to the same coal field which extends as far south as the centre of Guysboro'.

In the tract of country described as forming a part of the great coal field, there are extensive deposits of red sandstones, marls, gypsum, fossiliferous limestones, with salt springs, and occasionally cupriferous and ferruginous slates. These rocks sometimes repose upon carboniferous strata, containing coal plants and seams of coal, and in their lithological characters they agree with the gypsiferous red marl group of Europe. Their fossils were supposed by able palæontologists to indicate a formation newer than the coal, and several of their shells appear to be identical with those of the magnesian limestone. I had therefore classed the gypsiferous sandstones and marls with the new red sandstones of Europe. The same arrangement was adopted by Messrs. Smith and Brown, as stated in Halliburton's history of Nova Scotia, by Messrs. Jackson and Alger, of Boston, Mr. Logan, and every geologist who had touched upon the subject, until Mr. Lyell visited the Province in 1842, and by his more extensive acquaintance with similar formations in Europe, established an arrangement that corresponds much better with the natural order of superposition.

In the mean time important discoveries had been made in Russia, where an extensive system of rocks, composed of limestones, gypsum, marls, and rock salt, occupying the ancient kingdom of Permian, holds a position intermediate between the carboniferous and triassic periods, and the best evidence has been obtained from

their fossils that they are older than the new red sandstone with which they had been previously classed.

During my travels in Nova Scotia with Mr. Lyell, he compared the gypsiferous rocks of the Province with those of Russia as far as the sections obtained would permit; but I hesitated to yield up the opinion I had entertained, until I could make more extensive examinations of the coal region. I have since carefully collected every fact within my reach, and now have pleasure in confirming the views held and afterwards conveyed by him to the Geological Society of London in reference to the age of those rocks.

To the sections which Mr. Lyell has quoted in his travels in North America,* I might add several more in confirmation of the correctness of his arrangement, which I have since obtained. The details of such examinations can only be arrived at by a geological reconnaissance of the whole Province. I may, however, add that the village of Truro is separated from the valley of the Stewiacke by a ridge of quartzite, grauwacke, and trap rock. On the southern side of the ridge, and eastward of Organ's Inn, those rocks are succeeded by conglomerate, then by limestone, with shells, to the thickness of 500 feet, and gypsum of like depth, upon which rest beds of sandstone and shale, containing coal plants and thin seams of coal. The strata of the carboniferous rocks dip away from the ridge, and repose upon the limestone and gypsum. A perfect section of the rocks may be obtained, notwithstanding the disturbance that has taken place to the north.

The slate forming the base of the Ardoise hills, in the county of Hants, is succeeded by a conglomerate similar to that just noticed, and which is seen at the upper

* Travels in North America, by Charles Lyell, Esq., F. R. S., Vol. II., p. 208.

bridge of the St. Croix. Upon this conglomerate there reposes a belt of gypsum not less than 2000 feet in thickness, and at many places displaying distinct lines of stratification. The limestone also occurs farther northward, and both are subordinate to the carboniferous deposits of Newport. The gypseous marls and limestone of DeBert river underlie the carboniferous strata at the base of Folly Mountain. The fossils of the limestones have been identified with those of Windsor, the Shubenacadie, Pictou, and other places where they are associated with the gypsum. Their species have a general agreement with the shells of the old mountain limestone rather than with those of the magnesian, or triassic series, although a few kinds resembling the shells of both groups are sometimes present.

The gypsum, and its accompanying limestone, occur upon lines running parallel to each other, and the older rocks beneath them. They are generally superimposed on thick beds of conglomerate and red sandstone, and occasionally shales and sandstones containing coal plants. The most important beds of coal are situated in troughs above all these deposits; and I have observed that the fossil plants of the lower coal series are usually mineralized by the sulphate of Barytes. *Stigmaria* are rare in this part of the series, while in the productive coal measures above, they are numerous.

Mr. Lyell has divided the great coal formation into lower, middle, and upper. The lower division embraces the gypsum; the middle, the workable beds of coal; and the upper, a series of unproductive sandstones, shales, and limestones. This is perhaps the best division that can be made of the series in the present state of our knowledge. Upon the authority

of Mr. J. Dawson, of Pictou, Mr. Lyell has represented Prince Edward's Island as being carboniferous, and containing coal plants throughout, and colored it upon his map accordingly. The island is composed altogether of red sandstones, clays, and marls, and during my geological survey of it in 1846, I found only a few square acres that contained plants referable to the coal period. The pieces of fossil wood sometimes found in the superficial drift, have evidently been brought over from the main land by the causes to which the drift itself owes its origin.

The strata occupying the productive coal measures consist of:

1st. Grey, red, and chocolate colored sandstones and conglomerates.

2d. Red, blue, and black shales.

3d. Shelly limestones.

4th. Clay iron stone.

5th. Coal, of which there are numerous outcroppings throughout the districts.

The coal measures usually lie in long parallel troughs, or circular basins, towards the bottoms of which troughs, or basins, the strata dip in opposite directions at angles from 5° to 45° . The prevailing strike of the beds is from the south west to the north east. Along the coast-lines the coal measures undergo scarcely any fault, or dislocation. In the interior country they are frequently much distorted, or dislocated. The strata abound in the remains of plants that are usually found in the coal measures.

From Pictou Harbour, in Northumberland Strait, a belt of coal-measures, about ten miles broad, runs in a westerly direction across the isthmus, passing between the southern flank of the Cobequid Mountains and the

southern coast along the Basin of Mines, and thence further westward to Advocate Harbour. The length of this belt is about 100 miles: the strata which compose it rest along their northern margin on the fossiliferous slates of the Cobequid mountain; along its southern margin, at Moose River and Advocate Harbour, the coal strata rest unconformably on red sandstone. At Moose River the coal-measures contain a thin bed of marine limestone. The coal measures lap round the eastern extremity, and pass along the northern flank of the fossiliferous slates of the Cobequid range; whence they pass nearly due west to Apple River on Chignecto Bay. All the isthmus north of this line embraces coal-measures.

The Nova Scotian, or south-eastern coast of Chignecto Bay runs nearly at right angles to the direction of the coal strata, and presents an admirable section of them nearly thirty-five miles in length. Along this length of coast the strata lie in a trough, the base or synclinal point of which is Little Shoolie; and from this point, as you recede farther in a north-easterly direction, the strata rise to the north and north-north-west, with an increasing dip. At the Joggins, twelve miles north-east of Little Shoolie, where the blue sandstone is extensively worked for grindstones, the dip is from 25° to 35° . In the opposite direction, as you recede from the base of the trough, the strata rise towards the south, until on approaching the intrusive rocks of Cape Chignecto the inclination is 45° .

In making a careful examination of the entire line of this coast of thirty-five miles, only one fault was observed, and that occasioned a dislocation of only a few feet. By measuring the horizontal distances between the strata and making allowance for their inclination

at a number of places, the author has estimated the total thickness of the coal-measures on this coast at not less than two miles.

The chief part of the workable seams of coal is probably exposed on the Chignecto shore, and it is near the middle of the section that most of the coal-seams are seen. At the South Joggins, in the above coast-section, in the horizontal distance of three quarters of a mile, and in a thickness of strata amounting to 1800 feet, 19 seams of coal are seen, from 6 inches to 4 feet in thickness. Outcrops of coal have been observed to the south-west of the Joggins, on the Apple River, and to the north-east on the river Herbert; also on the Macan River, where one seam is ten feet thick, and of good quality; and also near the river Philip. On the eastern part of the coast of the Province, coal first appears at Pomket; then at Fraser's mountain and at the Albion mines, and other places near Pictou. In the belt of coal-measures which lies south of the Cobequid mountain, two seams of coal have been discovered in the forest, ten miles north of Truro, dipping from that range. Outcrops of coal appear also in the same belt at Folly River, at Debert River, at Economy River, and at Parrsborough.

Along the northern coast which borders on Northumberland strait, and along the courses of the rivers which fall into that strait, coalplants are very abundant. Among these are many large trees which were branching at their tops. The bark is generally converted into coal, and sometimes the whole trunk; and then the woody fibre remains very distinct. Several of these trees are four feet in diameter, and some have been sixty feet in length. Along this coast the trees are all prostrate, whether in the sandstones or shales,

and they do not appear to lie more in one direction than another. On the coast of Chignecto Bay fossil trees also abound ; and in most places they lie in all positions, parallel to the strata, or across them obliquely. They always increase in number in the proximity of a seam of coal. In one part, however, of the Chignecto coast, called the South Joggins, where the nineteen seams of coal already mentioned occur, in the space of three quarters of a mile, and in a thickness of strata amounting to 1800 feet, the fossil trees are all perpendicular to the strata. In tracing these seams of coal along the ravines to the distance of six miles from the coast, trees have been observed in the same vertical position in respect to the strata. The cliffs at this spot are from 80 to 100 feet in height, and consist of grey and reddish sandstone, bituminous blue shale, shelly limestone, clay ironstone and coal. The strata are rapidly degraded, so that at every successive visit which the author has made to the spot during the last ten years, he has found that trees which he had originally observed had disappeared, and that others were exposed in their stead. At the last visit he made, twenty-one trees were exposed to view, and this number was rather less than he had seen on former occasions. The ordinary length of the trunks is from 10 to 30 feet, but some have been observed that were 50, or even 70 feet long. They vary in diameter from 6 inches to 3 feet ; one was 4 feet 6 inches across. Most frequently their lower extremities are situated in shale ; but sometimes they spring from the coal itself, and when that is the case, they never pass through the seam of coal. Sometimes their roots branch out into the shale or sandstone they rest upon.

At the place above referred to, ten miles north of Truro, the strata above and below the coal abound in trunks, branches, and leaves of large fossil trees. The exterior of each trunk is in coal, and the interior is usually sandstone and fire clay. In one tree the whole trunk was coal, except a flattened portion, resembling the pith, and extending through the centre of the tree, from one extremity to the other. At the spot, on the Moose River, where the coal measures are represented to rest on old red sandstone, a fossil tree, 30 inches in diameter, is seen in dark-colored shale and sandstone. Ferns, *stigmaria*, and other fossil plants, of which I have found upwards of fifty species, are abundant at the coal mines of Cape Breton, and in the sandstones and shale of every part of the great coal field.

The total number of fossil plants found in the coal measures of Nova Scotia is 53 : of these, 48 have been enumerated by Mr. Lyell. In general they agree with the fossils of the carboniferous rocks of Europe. We are indebted to Mr. Lyell also for a catalogue of the fossil shells of the carboniferous and gypsiferous formations of Nova Scotia and Cape Breton. The total number is 48.

6th. *New Red Sandstone*.—The evidences brought forward to prove that the gypsiferous red sandstones and marls of Nova Scotia are not the equivalents of the new red sandstone, but form a part of the great coal series, dipping beneath the most important beds of coal, deprives the group, which had been described as having an extensive existence in Nova Scotia, of all the strata that were formerly referred to it. In my early labors I supposed that the red marly strata skirt-ing both sides of the Basin of Minas were members

of the new red sandstone group; but recent examinations have convinced me that they descend beneath the members of the coal series; and at Moose river, in Parrsboro', coal measures may be seen resting upon them uncomformably. The sandstones and marls of the valley of Kings and Annapolis counties repose upon *silurian* strata and conglomerates almost the entire length of their southern range; and at Blomidon they contain thin strata of crystalized and fibrous gypsum like those of the sandstones and marls of the Shubenacadie. Their general agreement also with the lower red sandstones has induced me to class them with the lower carboniferous rocks. Unless, therefore, the strata mentioned by Mr. Lyell as being situated near Truro, are new red sandstone, I know of no rocks within the limits of the Province to which that term can be properly applied.

7th. *Intrusive, or Igneous Rocks.*—The whole north-west coast of the peninsula next the Bay of Fundy, from Brier Island to Cape Blomidon, a distance of 126 miles, is one continuous belt of trap, greenstone, and amygdaloid. It is like a wall thrown up along the shore of the Bay, and will not, on an average, exceed three miles in breadth. It forms the northern side of the valley of Kings and Annapolis, and reposes upon the sandstones already noticed. At Blomidon it forms a perpendicular cliff, nearly 600 feet above the sea level, where the sandstones, with fibrous gypsum, are seen jutting out from beneath. The islands and head lands on the opposite side of Minas Basin, and at Parrsboro', are also composed of trap rocks, which, like those beforementioned, abound in crystalised minerals, and especially the zeolites.

If the axis of the Cobequid ridge be prolonged towards the west until it meets the Bay of Fundy, it will enter a trappean mass composed principally of red feldspar and porphyry, about seven miles broad. The western extremity of the axis on the Bay of Fundy is at Cape Chignecto, to the northward of which lies Chignecto Bay. The trap of the Cape is of two varieties—the red and the green. The red contains veins of sulphate of Barytes. Near Shoolie, and at a place called Cranberry Point, a conglomerate appears, which consists of masses of trap and sandstone. Near Apple River, the coal strata, which extend to the north of this ridge of trap, come in contact with it. The trap forms the axis from which the coal measures dip away until they become at Little Shoolie, horizontal. This point may therefore be considered the centre of the coal trough in this quarter, for towards it all the strata to the north also incline.

The trap rocks present some of the most sublime and interesting scenery in the Province. Their sharp angles projecting into the Bay of Fundy, give rise to great disturbances in the tidal currents, which have worn out bays, coves, and other places of shelter for small vessels. Their lofty mural cliffs are often studded with beautiful minerals. These, and the bold views they constantly offer to the eye, will always attract the traveller and naturalist.

8th. *Drift and Boulder Formation.*—Beds of sand and gravel, and detached boulders, are seen in every part of the Province. The drift has been from the north towards the south, which is the general direction of innumerable diluvial grooves seen on the upturned edges of the strata, especially those of the slates and grauwacke. Of the sandy and gravelly beds there are two divisions—the stratified and the unstratified. The

former have evidently been influenced by currents of water, and the latter appear like the collections of stones and gravel left by the melting of loaded ice-cakes. I believe that all these deposits were made by the sea and icebergs at that period when the continent was submerged.

Boulders are frequently seen on the Atlantic side of Nova Scotia on the tops of the naked hills. When they are poised on one or more of their sharp angles, they may be readily rolled from side to side by the application of a short lever. They are then called Rocking Stones.

About four miles from Halifax, in the direction of the North West Arm, there is a rocking stone of extraordinary magnitude. It is situated within a hundred yards of a pretty lake, and rests upon the naked granite forming the slope of a hill. The boulder itself is also granite, but it is dissimilar to the basis upon which it is placed. It is about 20 feet long, 14 feet wide, 9 feet high, and has been estimated to weigh 190 tons.

By the application of a lever, this boulder is easily rolled from the south-west to the north-east;—to the former point it returns. Two persons will also produce the rocking by running across the stone, which seems to have been

“ In nature’s rage, at random thrown,—
Yet trembling like a Druid’s throne
On its precarious base.”

In his geological examinations in this quarter, the Earl of Dundonald extended his inquiries to the causes which brought the rock to its present position, and the direction it had taken from its original site. By removing the surrounding earth, his lordship discovered its track, which is a broad groove worn out of the subjacent rocky platform from the lake to the boulder. The direction of this track is from the south towards the

north, a course nearly opposite to that of the general drift of the country.

The bow of the stone is much battered and rounded off, while the stern still retains the sharp angles of the quarry. The progress of the mass appears to have been slow, and it may have been ages in completing the journey from its parent mountain. The phenomena can scarcely be explained without reference to the transporting power of ice, when acted upon by currents of water.

The rocking stone, with its track, is one of the greatest natural curiosities in the Province. There are other boulders of this kind in the neighborhood.

MAMMALIA, FURS, HUNTING, TRAPPING, BIRDS, &c.

Although the wild animals, or game of Nova Scotia can no longer be classed among her Industrial Resources, it may be proper, before closing the present chapter relating to industry, briefly to notice such wild animals as are considered valuable on account of their flesh, or furs.

In the early settlement of the country, hunting was sometimes a profitable employment. The aborigines were ignorant of the value of furs; and often, for a few trinkets, they would barter the finest skins of the black fox and beaver. Many of the settlers from New England pursued the chase and followed trapping for a livelihood, and some of their descendants are not yet weaned from the occupation of their forefathers.

From the diligence and skill of the hunter, the demand for fur, and the advancement of agriculture and civilization, the numbers of wild animals have greatly declined over the whole continent of America. Indeed a similar remark will apply to the whole world. Some

of the animals bearing the finest furs have disappeared. Others are rarely seen, even in the remotest forests; and the time is rapidly drawing nigh when the use of the natural covering of animals must be superseded by articles of manufacture. The first trade of Nova Scotia was in furs and ivory. The fur trade is now unimportant, and there are no longer exports of the teeth of the walrus.

Beaver were formerly numerous, but their dams have been destroyed, and it is now stated by the Indians that there is not a single living beaver in Nova Scotia. The extinction of some animals has, however, been followed by the introduction of others. In Nova Scotia the beaver has been succeeded by the wolf, and the skunk (*Mephitis Americana*) has increased in numbers during the last thirty years. But the moose and cariboo, and the most valuable fur-bearing animals, seem destined to annihilation. With them will also disappear the native Micmacs, unless some powerful effort is made to bring them within the pale of civilization.

I have remarked elsewhere that the fallow deer, (*cervus Virginianus*) was not seen in New Brunswick prior to the year 1810, at which period wolves also appeared;—nor has it yet reached Nova Scotia on its march to the east. This beautiful animal has evidently been driven into that province by droves of wolves, which are now extending their march in this direction, and far beyond their former limits. In 1845 a wolf was seen in Nova Scotia, on the road between Halifax and Truro. In 1846, two were killed; and more recently others have been captured in the neighborhood of Windsor and Musquodoboit. The Legislature have offered a bounty for their destruction. In my excursions on the interior lakes of New Brunswick, I have seen them in droves, and more than once saluted them with a rifle.

ball. In the back woods of that Province the howlings of those animals during the night are terrific, and the sheep of the new settlers are frequently their prey.

Formerly the white goose (*anser hyperboreas*) was common in some of our bays during the spring. Not one of them has been seen of late, and they are now rare even in the Gulph of St. Lawrence. Forty years ago the woodcock was almost unknown in this Province; they are now plenty in some situations, being annually on the increase.

MAMMALIA OF NOVA SCOTIA.

ORDER I. CARMASSIERS.

Vespertilio—				
<i>Pruinosus</i> ,	-	-	-	Common Bat.
Scalops—				
<i>Canadensis</i> ,	-	-	-	Mole.
Condylaria—				
<i>Cristata</i> ,	-	-	-	Star-nose mole.
Ursus—				
<i>Americanus</i> ,	-	-	-	Black Bear.
Procyon—				
<i>Lotor</i> ,	-	-	-	Raccoon.
Gulo—				
<i>Cuscus</i> ,	-	-	-	Wolverine, or Indian Devil.
Mustela—				
<i>Veson</i> ,	-	-	-	Mink.
<i>Vulgaris</i> ,	-	-	-	Weazel.
<i>Erminea</i> ,	-	-	-	Ermine.
<i>Martis</i> ,	-	-	-	Martin.
<i>Canadensis</i> ,	-	-	-	Fisher.
Mephitis—				
<i>Americana</i> ,	-	-	-	Skunk.
Lutra—				
<i>Canadensis</i> ,	-	-	-	Otter.
Canis—				
<i>(Lupus) Occidentalis</i> ,	-	-	-	Wolf.
<i>(Vulpus) Fulvus</i> ,	-	-	-	Red Fox.
<i>Virginianus</i> ,	-	-	-	Gray Fox.
<i>Nigra</i> ,	-	-	-	Black Fox.
Felix—				
<i>Canadensis</i> ,	-	-	-	Lynx, or Wild Cat.

ORDER II. RODENTIA.

Castor—					
<i>Fiber,</i>	-	-	-	-	Beaver, (extinct.)
Fiber—					
<i>Zibethicus,</i>	-	-	-	-	Musquash, or Musk Rat.
Mus—					
<i>Decumanus,</i>	-	-	-	-	Brown Rat, Wharf Rat.
<i>Rattus,</i>	-	-	-	-	Black Rat.
<i>Musculus,</i>	-	-	-	-	Mouse.
<i>Leucopus,</i>	-	-	-	-	Field Mouse.
Gerbillus—					
<i>Canadensis,</i>	-	-	-	-	Jumping Mouse.
Arctomys—					
<i>Monax,</i>	-	-	-	-	Woodchuck.
Sciurus—					
<i>Hudsonius,</i>	-	-	-	-	Red Squirrel.
<i>Striatus,</i>	-	-	-	-	Striped or ground Squirrel.
Pteromys—					
<i>Volucella,</i>	-	-	-	-	Flying Squirrel.
Hystrix—					
<i>Pilosus,</i>	-	-	-	-	Porcupine.
Lepus—					
<i>Americanus,</i>	-	-	-	-	Hare.

ORDER III. RUMINANTIA.

Cervus—					
<i>Tarandus,</i>	-	-	-	-	Reindeer, or Cariboo.
<i>Alces,</i>	-	-	-	-	Elk, or Moose.

The cetacea and phoca have been classed with the marine animals. The game taken for their furs are the

Bear,	Otter,
Raccoon,	Red Fox,
Wolverine,	Gray Fox,
Mink,	Black Fox,
Weasel,	Wild Cat,
Ermine,	Muskrat,
Martin,	Woodchuck.
Fisher,	

Of the birds I have captured :

Accipitres, - - -	16
Passeres, - - -	6
Ambulatores, - - -	58
Gallinæ, - - -	4
Grallæ, - - -	18
Anseres, - - -	24

Total, . . . 126

The total number of birds in the Province is probably about 200. Of that number not more than 110 breed in the country, and several only remain a few days on their annual migratory voyages.

Bears, moose, and other wild animals, sometimes afford excellent sport, yet they are chiefly killed by the back-woods settlers and the Indians. A law to protect the moose is loudly called for, as they are often wantonly shot down, and their flesh is left in the forests.

Partridges, pigeons, plover, snipe, and woodcock, are all plenty in their seasons, and in the autumn the sportsman may spend his time very pleasantly on the borders of the great marshes, or skirts of the forests. The best duck shooting is in the spring, when creeping through mud and water and freezing behind ice-cakes are sometimes rewarded by a noble duck, or, perhaps, a goose.

CHAPTER IX.

Mines and Minerals—Granite, Slate—Minerals of the Silurian Rocks—Iron Ore—Iron Ore of Annapolis—Iron Ore of Pictou—Minerals of the Coal Formation—Gypsum, Limestone, Ores of Iron, Ores of Iron and Manganese, Salt Springs, Freestones, Grindstones, Flagstones—Coal, Coal Field, Coal Measures—Albion Mines—Exports of Coal—Cumberland Coal Measures—Cape Breton Coal Field—Coal Mines, Sydney, Lingan, Cow Bay, Bras d'Or, Carabacou, Inhabitants River—Exports—Royal Grant—Mining Association—Expenditures of Nova Scotia—Operations of—Ores of the Coal Fields—Iron—Copper—Iron of the Cobequid Mountains—Minerals of the Trap Rocks of the Bay of Fundy, &c. &c.—Building Stones—List of—Clays—Allum Clays and Slates—Ochres, &c.

Having given a succinct account of the Geology of Nova Scotia, I may now proceed to notice the Minerals, so far as they have been discovered, and form a part of the industrial resources of the Province. In this inquiry it will be convenient to follow the several rocky formations in their order of superposition. The granite of Nova Scotia is equal to any in the world for building purposes. The mica, feldspar, and quartz, exist in such proportions as to afford strength, durability, and beauty. The granite of the North West Arm, near Halifax, has been employed in the fortifications of the citadel, and of late in the erection of public buildings. It frequently contains masses of older granite, which are readily distinguished by a difference of color. Only a few years ago this rock was imported from Scotland. Granite is abundant along the eastern coast, between Halifax and Canseau. It may also be

obtained at Liverpool. At Shelburne it is most favorably situated for exportation. From the fine quarries opposite the town many cargoes have been shipped to the United States, and St. John, N. B. The rock is very beautiful and durable; but of late the demand for Shelburne granite has declined. The same rock abounds on the shores of Barrington. The granite of Annapolis, which may be seen in its Court-house, might be worked advantageously at those points where it makes a near approach to the river. Mill stones are frequently made from granite boulders found in different parts of the Province.

While wood is abundant, this rock will be seldom employed, except for public buildings, and its abundance along the American coast will always be a check to its exportation. A fine porphyry may be obtained in the Cobequid hills. The whole Cambrian group, which extends through the central and along the Atlantic side of the peninsula, abounds in excellent building stones. The grauwacke breaks into rhomboidal and cubical masses, and thus favors the erection of walls. A belt of clay slate extends from one extremity of the Province to the other. I have crossed it at upwards of forty different places. A minor belt appears at Rawdon, and crossing the Shubenacadie is seen near Gay's River, on its course to the eastward.

A quarry was opened a few years ago two miles southward of Kentville, and the slates taken from it have proved sound and durable. Some of the strata contain the sulphuret of iron, which should be carefully avoided, for it decomposes when it is exposed to the air. This quarry has been abandoned. Another was opened at Rawdon, and another at Gay's River. These also have been deserted—probably from the

high price of labor, and the distance between the quarries, and any navigable stream. The minerals found in the older slates have been objects of interest to the mineralogist, but of little practical value to mining. The sulphuret of iron is common, and it may yet be discovered in sufficient quantities for the manufacture of sulphur. The sulphuret and other ores of copper have also been found in small quantities. Rock crystal, smoky quartz, or Cairn Gorm occur in the granitic drift of Nictau. Shorl, hornblende, feldspar, and garnets, are not rare in the lower Cambrian rocks.

A deep excavation was recently made in the rocks of Dartmouth in search of a lode of copper ; but for what reasons I could never apprehend. The enterprise, as might have been expected, proved fruitless. Only very limited parts of the south-eastern part of the peninsula has ever been submitted to any kind of examination, and the chief part of the surface is still covered by the native forest. The numerous bays, rivers, and minor streams that penetrate this part of the Province, offer the best opportunities for making a survey, yet, up to the present time, comparatively nothing is known of its mineral productions. The sections I have taken across the Province were made solely for the purpose of determining some of the leading features of its geology.

MINERALS OF THE SILURIAN ROCKS.

The silurian rocks have been represented as extending almost through the Province, its entire length from Digby to Pictou ; those rocks also skirt the flanks of the Cobequid hilly range in the counties of Cumberland

and Colchester. In the former there are valuable beds of iron ore, which, from appearing at several points along the range, probably belong to almost continuous strata, being coeval with the formation in which they are situated.

The most common variety of iron ore in the oldest fossiliferous strata, is the hydrous-peroxide of that metal, or brown hematite. At Clements, in the county of Annapolis, and three miles from the mouth of Moose river, it outcrops, and may be traced a mile on the surface, with an average thickness of 9 feet 6 inches. It yields from 33 to 40 per cent. of cast metal, and the quality of the iron is very superior. The river affords abundant water power to propel machinery, and the harbour at its mouth communicates with the beautiful basin of Annapolis. The country abounds in white birch, and other kinds of the best wood, and there is free navigation to the whole Atlantic coast.

In 1826 an association was formed, called the Annapolis Iron Mining Company, and sufficient capital was raised in the Province to commence and carry on the work. All the lands containing iron ore at Moose River, Nictau, and Digby Neck, were purchased, together with several farms, mill-sites, carriage-ways, and every privilege that might be required for the most extensive operations. A large tract of wild land was obtained from the Government, to supply wood for charcoal. A dam was thrown across the river; furnaces for smelting and casting were erected, and the whole put in the best order. The whole expense of the establishment, when completed, was £30,000 currency. The smelting, casting, and manufacture of iron, commenced under the most favorable auspices, and both the ore and the iron produced from it proved

to be unexceptionable. Although a due regard to economy had not been practised from the commencement of the undertaking, the enterprise promised success, and the Province began to feel the benefits of home manufacture. At a period when the establishment was in active operation, the whole work was suddenly abandoned;—the fires of the furnaces were extinguished—the trip hammers ceased to move, and the pretty village of Moose River was deserted by all its inhabitants, except such as were engaged in fishing and agriculture. The charge of the iron works was committed into the hands of persons belonging to the United States, the principal of whom was an iron-founder in Boston, who maintained that pig iron only should be made,—that pig iron was to be sent to the United States, and there manufactured, and then returned to the British Provinces for sale, whereby the profits would fall into the hands of the American shareholders. Dissensions soon took place. It has been publicly stated, that the principal furnace was intentionally choked, and the enterprize was abandoned. Up to the present moment, the United States supply great quantities of castings and manufactured iron to Nova Scotia and New Brunswick, where the duty on such goods has been constantly reduced; indeed, the inhabitants on this side of the line favor the opinion that their Republican neighbors can import iron and coal from Great Britain, and supply them at a cheaper rate than the iron can be produced for, on the soil where both the ore and the fuel for its manufacture are inexhaustible.

On an average, 80,000 chaldrons of coal and 50,000 cords of wood are shipped annually from Nova Scotia to the United States, which return large quantities of

manufactured iron. Implements of husbandry, stoves, culinary utensils, edge tools, and even the axes employed in felling the forest, are imported from the Americans. The manufacture of iron in Nova Scotia would scarcely affect the iron trade with Britain; but it would operate in diminishing the imports from a foreign power, which levies high taxes upon agricultural produce, and all goods manufactured in these Provinces.

It is to be regretted that the Annapolis Iron Company had not employed men of science and skill; for beyond the selfish motives of those who had the control of the works, it is evident that they were not practically acquainted with the art of smelting iron. With a large furnace, and a powerful blast carried by water, they were only able to obtain, with the best charcoal, thirteen tons of cast iron per week—not equal to one-third of the produce of the English and Scotch furnaces, which work ores of nearly the same per centage.

From the disagreement that took place among the members of the Company, its operations terminated. The American shareholders were the only persons who professed any practical knowledge of the business, and their aid was withdrawn. Several hundreds of tons of pig iron and castings, with 40,000 bushels of charcoal, still remain in the stores, and the whole establishment is now falling into decay. The iron imported into Nova Scotia and New Brunswick amounts to £130,000 per an., still there is not a smelting furnace in any of the British North American Provinces, Canada only excepted. This state of things will probably remain, until the resources of British America are better known in the mother country, where there is capital to improve them. When the forests of Clements shall fail to afford fuel for the reduction of the iron ore, the coal mines of Cumberland will supply the demand at a moderate price.

Another bed of iron ore occurs in the silurian rocks of Nictau, which, like those of Clements, abound in the fossil shells and corals peculiar to the group. The ore at this place is six feet four inches in thickness, and the outcrop is seen on the surface to the distance of half a mile. The falls of the Nictau river offer an admirable site for machinery, and the forests through which the stream passes would maintain a furnace for a long period of time. Excellent iron was manufactured at this place in the early settlement of the country. Silurian fossils are found at New Canaan, southward of Kentville; and the ochres that usually accompany the iron were made into pigments at that village a few years since. There are indications of the iron ore on the Horton Mountains, and the Ardoise Hills. At McLellan's mountain, twelve miles from the Pictou coal mines, the hematite appears again. The best ore is sixteen feet in thickness, and agrees in its principal characters with that of Clements and Nictau; both the ore and the adjoining strata abound in silurian fossils. Other varieties of iron ore have been discovered on the east river of Pictou, the Shubenacadie, and the Grand Lake, in the county of Halifax. The extent and value of these ores are but imperfectly known. An excellent hematite iron ore also occurs in the forests of Rawdon, and near the Shubenacadie; but the examinations I have made of them are insufficient to determine the magnitude of their deposits. The iron ores of the Cobequid Mountain will be noticed with the minerals of the trap rocks.

Some years ago the General Mining Association commenced the smelting of the Pictou hematite, at the Albion Mines, but the work was discontinued. The quantity of bar and pig iron imported into Nova Scotia so long ago as 1834, was 1,347,240 lbs., value in sterling money £3,797. Since that period the quantity im-

ported has more than doubled, and the amount of iron brought into Nova Scotia and New Brunswick is now equal to £130,000 per annum. From the abundance of ore and fuel in Nova Scotia, all the iron for both Provinces might be supplied at a much cheaper rate than it can be imported, and profitable exportations might be made to the United States in lieu of an inferior article now purchased from our American neighbors. There are at present seven iron foundries in the two Provinces above mentioned. Those foundries are supplied with iron from Great Britain. Now, if the proprietors of those foundries can import their iron, and manufacture it into castings, under the high rate of wages of the country, and make sound profits, it is obvious that the ore of those Provinces may be smelted with profit also, especially as the important article of fuel, either wood or coal, may be obtained cheaper here than in any other inhabited country. From the scarcity and high price of iron in Nova Scotia, and indeed in all the British American Provinces, its use is limited in agriculture and all kinds of machinery; and if any of our ships have been imperfectly fastened, the fact has resulted from the high price of iron, and not from design or negligence. All the iron employed by the Mining Association, for railroads and other purposes, is imported from Great Britain, and having been transported 3000 miles, it is finally thrown into castings at the very site where thick beds of Nova Scotia ore are seen protruding from the earth, and where a single stratum of coal, 36 feet in thickness, is ready to supply the fuel requisite for smelting and manufacture.

MINERALS OF THE COAL FORMATION.

Gypsum.—It has been stated already that the lower parts of the great coal formation include thick beds of red sandstone and marls, associated with vast deposits of gypsum and fossiliferous limestone. The gypsum abounds on both sides of the Avon, and its tributary branches the Cocomégun, Kennetcook, Meander, and St. Croix. The thickest deposit of gypsum I have ever seen appears on the east bank of the latter stream. The gypsiferous region extends from those places eastward, and embracing the whole northern side of Hants county, it crosses the Shubenacadie, and runs with the coal-measures to the north-eastern shores of the peninsula, occupying in its course the whole tract of country watered by the tributaries of that stream. It occurs at Parrsboro', Londonderry, Truro, and at numerous places in the county of Pictou, and along the eastern coasts of the Province. In Cumberland it also appears at numerous sites, on a line running parallel to the Cobequid chain, from Maccan to the River Philip, and at Napan, whence it extends eastwardly to Pugwash. It also occupies the central portion of Cape Breton. It is universally accompanied by the limestone, and, like it, crops out beneath the upper coal measures. The abundance of the mineral throughout the districts mentioned, renders all description unnecessary.

Tracts of country containing gypsum are readily distinguished: where the mineral is not seen at the surface, the earth is indented by deep pits, called by the quarrymen, "kettle holes," and narrow ravines with smooth borders of green sward. The gypsum is constantly undergoing decomposition wherever water is present. The earth frequently becomes cavernous, and the sur-

face being undermined falls. From some of the "kettle-holes" the bones of the native Indians, and wild animals, have been exhumed. In one instance I observed several spruce trees, each not less than 50 feet in length, which had stood above a chasm that fell in, and left nothing but their tops above ground. It is unsafe to walk over such tracts in the spring of the year, when the frost of winter is escaping.

The gypsum is of two kinds—the hydrous and the anhydrous; they only differ, as the terms imply, in the quantity of water present. The latter in a pure state is not combined with water. The hydrous gypsum is best suited for architectural purposes, and it is generally preferred by the Americans for agriculture. Besides these there are selenite and fibrous gypsum, which are beautifully crystalized. From being transparent, they are called by the inhabitants "*isinglass*." The gypsum is often pure white, or blue. Upon the banks of the Shubenacadie, and at Gay's River, I found masses of bright red and jet black gypsum. The mineral is colored by carbon, iron, and manganese.

Gypsum has justly been classed among the valuable minerals of the Province. It is annually exported to the United States, where it is calcined, ground, and applied to the soil as a stimulant. Its effects upon vegetation there are remarkable; but it has been observed, that wherever gypsum has once been applied, it must be continued. The principal places of shipment are Windsor, the Shubenacadie, and the south side of Minas Basin. 20,472 tons of plaister were shipped from the county of Hants last season. At many places vessels lie aground at the quarries. In other situations the rock is transported some distance on carts and waggons, and at Windsor a short railway is employed. On the banks of the Shubenacadie the plaister-diggers have bur-

rowed in the perpendicular cliffs 100 feet above their bases, whence they throw the gypsum down to high-water mark.

Notwithstanding gypsum is abundant, and there is an evident lack of lime in the soils of the Province, I am not aware that any series of experiments has been tried to test its properties as a fertilizer. It sometimes happens that the soil in the immediate neighbourhood of the plaster rock is rendered sterile from the predominance of that mineral; again, in situations where the rock disintegrates slowly, the adjacent soil is not calcareous. A course of accurate experiments, with reference to the use of gypsum as a manure, is worthy the attention of agricultural societies, and farmers in general.

Some of the compact gypsums afford good alabaster, which may be turned in a lathe, or cut into ornaments. The selenites contain large and very beautiful crystals.

Barytes.—Sulphate of barytes sometimes occurs in the older sandstones. The largest vein of that mineral I have seen is on the farm of George Taylor, in the valley of the Stewiacke;—it exceeds ten feet in thickness. A mill has recently been erected by Mr. Ross, of Truro, and in it the heavy spar is converted into pigment.

Limestone.—Accompanying the gypsum, there are thick beds of limestone abounding in the shells peculiar to the group. They are seen in compact strata, or where the rock is slaty: it usually contains encrinital remains. The usual colors are white, brown, yellow, and black. The limestones are different throughout the whole coal formation. At a few situations good marble may be quarried, and some polished specimens display the fossils in great beauty. The compact limestone yields a strong lime suitable for the purposes of building, but it is less white than that obtained from

primary limestone. The chief uses of this rock are the advantages it offers to agriculture. It abounds on the banks of the Shubenacadie, Avon, Maccan, and other streams, whence it may be readily transported. There is also abundance of wood and coal for its calcination. With all these facilities of preparation, it is seldom applied to the soil. Only a few small and very imperfect kilns are in operation, and the chief part of the lime employed in masonry is imported from New Brunswick. It is true, that in new countries, where the earth has first to be cleared of its timber before it can be made productive, the application of stimulants to the soil, and the exercise of science, may be unnecessary; but the time has long since arrived, when the old worn out lands of the first settled districts of Nova Scotia require an improved system of tillage.

Ores of Iron.—Hematite, and other ores of iron, sometimes appear in the older red sandstones, and in the banks of the Shubenacadie they would supply a smelting furnace; but the abundance and richness of the ores of Annapolis and the Cobequid Mountains, will always draw away all enterprise from these minor deposits.

Ores of Manganese.—In the same rocks we find the anhydrous red oxide, the hydrated ses-quioxide, and other ores of manganese, some of which are beautifully crystalized. The most common of these is the anhydrous binoxide, or pyrolusite. It occurs in irregular masses, and has been found in the largest quantities at Petite, in the county of Hants, and at Parrsboro'. It is also found at Rawdon, Douglas, and in the banks of the Shubenacadie, and at other places. A few tons have been occasionally shipped from Petite to the United States, where it commands a good price. Upwards of 40,000 tons of this ore are annually employed in Great

Britain, where the price is usually £10 sterling per ton. It is used in various manufactures. Few examinations have been made in reference to the quantity of manganese that may be obtained in Nova Scotia. As the inhabitants have no control over these minerals, they seldom attempt any discovery; and such as have been made are frequently kept secret. The manganese will form a valuable article of export at a future day.

Lead Ore.—Narrow veins of galena occur in the limestones of the Shubenacadie, Stewiacke, and Brookfield, and the ore sometimes contains a small percentage of silver. No profitable veins have so far been discovered.

Salt Springs.—In the tract of country I have represented as being gypsiferous, there are numerous salt springs, which appear to have some connexion with the vast deposits of sulphate of lime before mentioned—a striking feature in their geological character. They are most numerous in the county of Hants, where they form a chain, reaching eastwardly from the Avon to the Shubenacadie on lines running parallel to the Kennetcook and the beds of gypsum in that quarter. They also occur at several places in the county of Pictou, and in Londonderry. In the county of Cumberland they occupy the gypseous rocks from Maccaan to the River Philip. Besides the chloride of sodium, these springs sometimes contain the sulphate of lime and soda, and other saline substances. Mineral springs possessing medicinal properties are not rare, yet few of these waters have been analysed, and the springs themselves are chiefly situated in the forests or uninhabited parts of the country. I have found the quantity of the chloride of sodium, or salt, in these waters to be very variable; from mixing with those that run over the surface, their saltiness is affected by the rains of autumn, the dissolving

snows of spring, and even a single shower. In the manufacture of salt the first important step would be to divert these waters away from the saline pools. During the heat of summer, the salt frequently crystalizes around the borders of the springs, and I have seen the brushwood drooping over them beautifully incrustated with the mineral. At one site in Hants county, I found small pieces of rock salt in the clay whence the spring issued; and Mr. Robert Smith, of Maitland, sent me a piece of gypsum that was highly impregnated with salt; but I have been unable to extend these observations, important as they may appear, to any practical conclusion.

The general distribution of salt over the earth is worthy of grateful notice. In Europe, thick strata of rock salt have been discovered among the gypsiferous sandstones. In Africa, the mineral covers a vast plain. In Peru, Chili, Mexico, California, and the lofty mountains of the Cordilleras, salt is abundant. In the northern part of the Great Continent its existence is indicated by the presence of saline springs, and there can be no doubt that the salt springs of Nova Scotia rise from deposits of that mineral which remain concealed in the earth. Much of the salt used is obtained from saline springs, or sea manure; and notwithstanding the low price of the article, it might be successfully manufactured by evaporation in Nova Scotia. But, to supply an article of commerce, it would be necessary to penetrate the salt strata, which at some situations may, no doubt, be reached at a moderate depth. The presence of rock salt in the clay abovementioned, holds out encouragement for enterprise; and as these Provinces are altogether supplied with foreign salt, the opening of such mines is of much importance, and their value as forming a part of the industrial resources of

the Province is manifest. Among the mineral waters that have been discovered, the Wilmot spring is the only one that has obtained any celebrity. The water contains iodine, lime, sulphur, and magnesia. It is taken with advantage by scrofulous patients, and frequently relieves the urgent symptoms of dyspepsia.

Freestones.—The sandstones of the group under consideration sometimes afford excellent freestones, which, when first taken from the quarry, are soft, and readily hewed with axes; but after they have been exposed to the air they become hard and resist the weather. Being uninjured by heat, they are frequently employed for fire-places and ovens. For the general purposes of architecture, they are less durable and elegant than the gray sandstones of the coal-measures. Some of the coarser kinds are employed for mill-stones.

Clay.—Clay is very abundant in this formation. Wherever the argillaceous strata are exposed to the elements, they are converted into beds of tenacious clay, which are common on the surface. Some of these clays contain a small quantity of lime. Such should never be employed in the manufacture of bricks or pottery ware, for the slacking of the lime after burning, causes the mass to crumble down. Veins of reddle, or red chalk as it is called, are employed by carpenters, and for marking sheep.

Soils.—The soils reposing upon the red sandstones generally partake of their colors and properties, notwithstanding collections of boulders and drift, originally belonging to other formations, sometimes occupy their surface to some extent. In the valley of Kings and Annapolis, granitic and trappean soils are found resting upon the sandstones, and the southern drift of

the Cobequid is scattered over the lower grounds skirting the north side of Minas Basin. Wherever the soil has been derived from the red marly clays and sandstones, they are very fertile: hence the richest agricultural districts of the Province are situated upon those rocks, which, by simple disintegration, supply the necessary elements for the production of plants.

Coal.—Of all the minerals found in the earth, coal and iron administer more to the necessities and comfort of mankind than any other. Coal not only supplies domestic fuel, but it sustains the furnace and the forge. In the production of steam it propels machinery, and by it many of the multifarious operations of manufacture are performed almost without the aid of animal labor. The application of steam to navigation, and the construction of railways, have brought about a new era in the affairs of the world, and thereby the importance of coal is daily on the increase. It is of the highest importance to Great Britain that she possesses coal on both sides of the Atlantic ocean, whereby she will be able to support her steam navigation to the western world. This advantage will give the nation the highest ascendancy in peace and in war.

The coal of Nova Scotia is sufficient to supply the whole steam navy of Britain for many centuries to come, and also to meet amply the demands of the North American Colonies. That resources of so much value should be left free and open to public competition—to public enterprise—is necessary to their development and beneficial application; yet certain it is that the inhabitants of the Province have never evinced much mining energy.

I have already represented the great coal field of Nova Scotia as extending from Chignecto Bay along

the north side of the Province to Pictou, and thence along the coast of the Gut of Canseau. Commencing in Kings county, a coal tract extends from Horton, Falmouth, and Windsor, along the south side of the Minas Basin, across the Shubenacadie, along the northern side of Musquodoboit, to the district first mentioned; thence crossing the Gut of Canseau the same field embraces a large part of Cape Breton Island. In my letters upon this subject, published in 1844, it was convenient to begin at Horton, the most western extremity of the southern arm of this coal district. Coal-measures are seen at Horton Bluff, Half-way River, and near Windsor. The situation and character of the carboniferous strata in this quarter are not very favorable, yet the recent discovery of coal in it would fully justify a careful exploration of the district.

At Newport, and only a few miles northward of the lower part of the St. Croix River, I found the middle, or more productive coal-measures. Coal-measures also appear at several places in the direction of the Kennetcook, and at Noel; and at other places thin beds of coal have been accidentally discovered. The proximity of the gypsum to these coal-measures is no evidence of their unproductiveness. The fossils contained in them afford a far better guide to the geologist. I have observed that the carboniferous rocks underlying the true coal-measures, contain more fossil *coniferae* and less *stigmæria* than those of the middle coal-bearing strata, and the plants are more frequently mineralised by the sulphate of barytes; yet, from the limited examinations that have been made, it would be rash to conclude that even these rocks contain no workable beds of coal. The mineral character of the county of Hants calls loudly for a careful geological

reconnoissance, and the opening of a coal mine in this quarter would be a boon to the populous villages bordering on the estuaries of the Bay of Fundy.

The advantages that would arise from the working of coal at Horton, or Windsor, are almost too obvious to require any remark. Vessels are chartered at Windsor and Cornwallis, and despatched to Sydney for coal, the price of which at the mines is 18s. per chaldron; and when the article is landed at those places, its actual cost is no less than 36s. per chaldron. The coal required by the different towns and villages in the western parts of the Province, might be obtained from Cumberland for one half of the above price. The commencement made by the General Mining Association to open the coal mines at the Joggins, in Cumberland, is hailed with satisfaction by the inhabitants of the western counties; and should the abandoned iron works of Annapolis ever be revived, the above mines will offer a cheap supply of fuel, after the forests of Moose river have disappeared.

The coal-measures cross the Shubenacadie, pursuing an easterly course through Brookfield, the valley of the Stewiacke, and northern border of Musquodoboit. Seams of coal, from a few inches to a foot and upwards in thickness, may be seen at a number of places where the rocks have been exposed by the streams; but there are no deep natural sections across the strata like those of Pictou, Sydney, and Cumberland. The formation then bends away to the north-east, and unites with the coal region of the eastern shores.

It has been stated that coal-measures skirt the northern shore of Minas Basin, and stretch along the northern base of the Cobequid hills. Small seams of coal

have been exposed by the streams in their descent to the Basin. A foot of good coal occurs in the banks of the Big Village river. The banks of the north river of Onslow also afford some facilities for examination in this quarter. Three strata of coal are seen near the Tatmagouche road, one of them, being 18 inches in thickness, has supplied some domestic fuel. Others appear along the borders of Salmon river, which passes through the extensive village of Truro.

There is an outcropping of coal on the farm of Mr. John Archibald, on the road between Pictou and Truro, and fourteen miles from the latter place. A few years ago a shaft was opened to the depth of 30 feet; and a stratum of coal, $2\frac{1}{2}$ feet in thickness, was penetrated. Mr. Archibald informed me that after he had raised 600 bushels he found his labor unprofitable, and his proceedings were arrested by the General Mining Association. The mine is now filled with rubbish. The coal in this direction is only about two and a half miles distant from the iron of the Cobequid. These coal measures are continuous from those of the westward, and I am of opinion they embrace much thicker beds of coal than any that have yet been discovered on the surface.

It has been stated already that the coal field skirts the whole Nova Scotia side of Northumberland Strait, to the Gut of Canseau. The bituminous mineral has been accidentally discovered in this region, at Pomket, and a number of places elsewhere; but, the position and extent of the productive strata have never been ascertained;—their national and provincial value cannot be arrived at except by a careful survey. The most important coal-measures discovered are those of

Pictou, and which appear most advantageously on the east river of that county. Messrs. Smith and Brown* have estimated their extent by the outcrop of the underlying limestone. The carboniferous basin of this district is seen at Merigomish ; and crossing the three rivers of Pictou, it appears at Carriboo harbour, and probably embraces Pictou Island, being estimated to contain a hundred square miles. That area, however, embraces many faults or dislocations. It is not a separate and independent tract, but forms a part of the great coal field already noticed. At Fraser's Mountain, and other places in the vicinity of New Glasgow, the coal is seen at the surface, and at a few situations it may be obtained at inconsiderable depths.

The operations of the Mining Association are at a site about two miles from New Glasgow, on the west side of the east river, and about six miles from Pictou harbour, to which the company have laid down a railway to afford passage to the produce of the mines.

Pictou, or Albion Mines.—The Pictou, or Albion Mines, are situated about one hundred miles by land from Halifax, and 80 miles by water from the Gut of Canseau, the most westerly passage from the Gulph of St. Lawrence into the Atlantic. They are the most valuable mines ever opened in British America, affording a large export trade, and a chief part of the Queen's Casual and Territorial Revenue in the Province. Ten strata of coal have been penetrated ; the main coal band is 33 feet in thickness, with 24 feet of good coal ; of this only $12\frac{1}{2}$ feet are suitable for exportation,—the remaining part is applicable to furnaces and forges. The inclination of the strata is north 41° , east 17° ,

* Halliburton's History of Nova Scotia, vol. II., p. 421.

and the strike is at right angles. The mines are worked by the General Mining Association of London. Seven shafts have been opened—four are in operation, and the coal is entered by long parallel level “boards” 18 feet wide. The pits are along the line of the main boardgates. From the bottom of each pit there is a horse road running in opposite directions along the strike of the principal coal bed. Each road conveys the coal of its own, and the next five boards above it, which also have roads cut obliquely upwards through the walls of the coal that remains between the boards. The lowest part of the mine is 451 feet below the surface, and 427 feet below the tide level of the river, one half a mile distant. The extent of the workings will not exceed three quarters of a square mile.

A railway has been laid from the mines to the loading ground at the mouth of the East river, three miles above the town of Pictou, at a cost of £70,000, including the locomotives. The locomotives make five trips each, daily, and convey about 90 tons of coal in each train of 30 cars. A steam tug is kept in motion, and aids in bringing the ships up to the loading ground. The cost of this service pilotage, and other port charges, fall upon the freight, and ultimately upon the price of the coal. The loading ground will accommodate a number of vessels at the same time, but it sometimes happens that the arrival of 20 or 30 vessels causes some detention.

The coal is mined by the cubic yard, the miner finding his own light and powder. The price for mining a cubic yard in the “boards” 18 feet wide, and 12 feet high, and which afford the chief part of the coal, is about 1s. 4d. In the headings it is from 1s. 7d. to 2s. per cubic yard. Two cubic yards on

average yield one chaldron of merchantable coal, and one-fifth of a chaldron of slack, or fine coal. The average cost of mining coal of all qualities is 1s. 6d. per ton. The various expenses of the mines, engineers, &c., render the actual cost of each chaldron of coals at the pit's mouth, 3s. 1½d. per ton. The cost of screening, transporting to the loading ground, and other charges, amount to 3s. 9d. per ton. This does not include repairs of roads, wear of engines, payment of the Royalty, and interest on the capital invested. The cost of raising and shipping a chaldron of coals under the system pursued by the former occupants of the mines was 12s. 1 3-4d. per chaldron, exclusive of wear and tear. It is only by extensive and skilful operations that the company are able to compete in the United States market, and under a heavy duty, with the venders of American coal.

The miners each cut 4½ cubic yards per day, which, at the before mentioned rate, yields them 6s. per diem. Light and powder cost 6d. per day. One ninety-sixth part of their earnings is reserved for the education of their children, and they make a small contribution to the resident physician. After making every deduction, the annual wages of the miner is £80 1s. 6d., and to this is added by the company, a house free of rent, and a supply of fuel, which makes his receipts equal to £90 per annum. This is a rate of wages double that which is given to laboring farmers, and equal to that of the best mechanics. The miners are principally from Scotland. A few of the natives of Nova Scotia are employed above ground, and receive from 3s. to 4s. per day. As the population increases, it is probable that the native inhabitants will become miners. Notwithstanding a due regard to the comfort and morals of these laboring people has been manifested by the agents of the company,

"strikes," and other irregularities, have sometimes occurred; and of a number of families that were recently brought to the mines at the cost of the Association, only a few have remained in the country. The greater number embarked for the United States as soon as they had obtained a comfortable passage to Nova Scotia.

The shipping season commences at Pictou about the 1st of May, and continues until the middle of November. Between those periods the northern harbours of Nova Scotia are rendered unnavigable by ice, or the coast is visited by storms and fogs. The price of coal, for a small quantity, or a single cargo, at Pictou, is 16s. 6d. currency per chaldron. A deduction of 1s. 6d. per chaldron is made to purchasers of all quantities exceeding 1000 chaldrons. The slack, or fine coal, is delivered on board vessels for 7s. 6d. per chaldron, and a deduction of three per cent. is made upon it for cash payments. It is purchased by blacksmiths, who, for their forges, prefer it to any other.

The average weight of the Pictou chaldron is 3456 lbs. The average weight required in the American market is 2940 lbs. for the chaldron. Pictou coal measure exceeds the measure of Boston, so that 100 chaldrons measure 120 chaldrons at that place. The ordinary freight of a chaldron from Pictou to Boston is 13s. 9d.—to New York and Providence, 15s. per chaldron. At New York the chaldron is only 2500 lbs.

The exportation of coal from Pictou to the United States depends much upon the American tariff; and if a high rate of duty were levied upon the coal, the trade would cease altogether. Of late there has been an increase of tonnage in this trade. The following table, shewing the number of cargoes of coal exported from Pictou, in American bottoms, has been obtained from an authentic source:—

In 1839,	237	cargoes.
" 1840,	107	"
" 1841,	199	"
" 1842,	140	"
" 1843,	71	"
" 1844,	53	"
To Septr. 1st, 1845,	44	"
To Aug. 25th, 1846,	110	"

At the present time there are no less 167,000 tons of shipping employed in the transportation of coal from Pictou and Cape Breton. An increase in the demand has arisen from the merits of the coal as compared with the anthracite of Pennsylvania, but more especially from the reduction of the duty, which, from 7s. 6d. per ton, has been lowered, upon an average of the prime cost, to about 3s. 9d. per ton. The annual quantity of coal raised at the Albion mines is now 70,000 tons. The exports stated in the Custom House returns for the year ending 5th January, 1848, from Pictou, is 72,236 chaldrons. The mines are capable of supplying double that quantity, but the frequent change in the American tariff, and the payment of the Royalty, have cautioned the company to proceed with circumspection, although they have not withheld any outlay necessary to bring the resources under their control into operation. The actual quantity of coal contained in the Pictou Basin cannot be accurately ascertained except by a careful survey.

Various estimates have been made in the United States of the comparative value of American anthracite and the Nova Scotia bituminous coal, and all the differences of weight and measure have been taken into the account with much care. From the statement made by Walter R. Johnston, Esq., who was authorised by the Navy department of the United States to report the comparative value of American and Nova Scotia coals,

and in an elaborate manuscript paper upon the subject, it appears that the Nova Scotia coal, even under a duty of 7s. 6d. per ton, was sold much lower in that country than the anthracite of the Eastern States: the latter being \$1.48 above its relative value. With the evidence of this and similar facts, and with a view of the geographical positions of the coal districts in America, I am fully of the opinion that the coal of Nova Scotia, from its proximity to safe shipping ports, is destined, under a reciprocal trade, to supply fuel for the eastern cities of the American union.

According to the experiments of Mr. Johnston, the efficiency of the coals is stated as follows:—

Anthracite,	100
Pictou coal,	88.4
Sydney,	83.4

Notwithstanding the higher evaporating powers of the anthracite, the Pictou and Sydney coals stand prominent in their ready combustion, for which the anthracite requires complicated and expensive furnaces.

According to Vanuxum, the anthracite of Pennsylvania contains, of—

Carbon,	90.1
Silica,	1.2
Oxide of iron,	0.2
Alumina,	1.1
Water,	6.6
	<hr/>
	99.2

Mr. Johnston's analysis of the Pictou coal, gives—

Volatile and combustible matter,	26.90
Carbon,	58.86
Ash,	12.95

98.71 •

The above is a higher proportion of carbon than I have obtained. The difference has probably arisen from the variety of the samples submitted to analysis.

According to returns contained in the Journals of the House of Assembly, from the report of a committee in 1833, the number of men then employed at the mines was 915. By the more extensive use of machinery, that number has since been reduced. The number of horses was 203, and there are 11 steam engines in operation. The company has also an iron foundry at the mines, where the castings are made for their works. The annual expenditure is represented as being £73,848 11s. 10d. From 1828 to 1838, 190,747 chaldrons of coal had been raised. Since the latter period, the quantity raised annually has been much increased. It will be seen by this statement, as well as by the report of the committee referred to, that the great outlay of the company has never yielded them a corresponding return, and that they must enjoy many years of profitable trade before they can be reimbursed for the expenditure they have made in the Province. To this subject I shall advert hereafter.

The coal mines of Pictou were not worked to any extent until 1818. On the first day of January, of that year, two mines, one on the east and one on the west side of the river, were leased to Edward Mortimer, Esq., for 21 years, at an annual rent of £370 currency, and a Royalty of 3s. per chaldron on every chaldron raised and sold over 1400. On the decease of Mr. Mortimer in 1819, the mines were leased upon the same terms to Messrs. Smith and Liddell, who, having occupied them until the 1st January, 1828, surrendered them to the British Government. During this lease the mines were worked by Mr. Adam Carr, who, in an inquiry since instituted by the House of Assembly, is stated to have sold the coals at 13s. 6d. per chaldron. It appears, however, that in 1822 and 1823 they were sold at the wharves in Pictou for 20s. 9d. per chaldron. By the

evidence of Richard Brown, Esq., before a committee of the House of Assembly of Nova Scotia, in 1839, the operations of Adam Carr did not exceed 54 feet in depth, and by them the coal seams were exhausted to the water level. The coal was then obtained at less cost than now results from deep mining, draining, and ventilation. The whole quantity of coal raised under the lease to Messrs. Smith and Liddell from 1818 to 1827, inclusive, was only 23,325 Winchester chaldrons, and the total amount of Royalty paid was but £5148 15s. 9d.

On the 11th July, 1826, a Royal Grant of those Mines was made to the late Duke of York, by which he became the sole lessee for 60 years of all the mines and minerals of Nova Scotia that had not been previously granted with the land, and without a reservation of Royalty. No reservation was made of coal and iron in parts of Annapolis, Colchester, and other counties, and upon those tracts valuable minerals have been discovered. At Annapolis the unreserved iron has been wrought at different periods. A part of the iron of the Cobequid mountains is not reserved, and an Act of Incorporation has passed the Legislature for a company to commence its smelting and manufacture.

In 1828, Messrs. Rundell, Bridge & Co., assignees of the Duke of York, came into possession of the Pictou mines, and under their lease they are now worked by the General Mining Association of London—a body composed of capitalists in London.

Cumberland Coal Measures.—Sandstones, shales, and limestones, with occasional thin seams of coal, skirt the eastern shores of the Province from Pictou to Bay Verte, extending thence to Bathurst Bay, in New Brunswick. Beds of coal have been discovered along the banks of the River Philip. At Spring Hill, in Maccan, several strata of coal appear at the outcrop of the carboniferous

strata. One stratum is about 12 feet, and the coal is of excellent quality. Coal also appears near the Maccan river, and River Hebert. At several places small quantities have been raised for domestic uses. No general exploration of the district has even been instituted.

The coal of Spring Hill may be advantageously worked, but its distance from any navigable river will require the outlay of a large sum in the construction of a railway, either to the Maccan river or to Parraboro'. To a proper site for delivery on the former stream, the distance is 10 miles; and to Partridge Island river, at Parraboro', 20 miles. There is an excellent level site to the latter place, where the navigation is open at almost every season of the year, and large vessels may be admitted with greater ease and safety than upon the rapid tides of the streams falling into Cumberland Basin. The Mining Association have commenced an examination of this district; and J. Smith, Esq., formerly of Pictou, an able mining engineer, is engaged in opening the coal mines of Cumberland. Besides affording a ready supply of fuel to the towns and villages of the western part of Nova Scotia, the shipment of the company's coals at Parraboro' would open a brisk trade, and greatly improve the condition of the country. This object is now contemplated by the Hon. Samuel Cunard, the agent of the Association in Nova Scotia, and is characteristic of that gentleman's well known spirit of enterprise. On the coast of Chignecto, or Cumberland Bay, the sea has worn away the shore, and presented a beautiful section of the coal field, which extends along the side of the Bay to the distance of 45 miles. Each stratum may be examined by walking along the shore, at some places strewed over with masses of coal, clay iron stone, and the fossil trees already described. At the South Joggins, and near the valuable grindstone quar-

ries of Amos Seaman, Esq., beds of coal appear in the cliff—which is from 100 to 150 feet high. Between the coal beds there are fossil trees of large dimensions standing perpendicular to the strata, and evidently at the sites where they grew. Some of the coal beds are only a few inches, others are from two to four feet in thickness, and the coal has proved to be of good quality. One of the strata has been worked several years by two poor miners. During the past year operations have been commenced by the Mining Association, under the management of Mr. Smith. £16,000 have already been expended upon the coal mines of Cumberland, and the exportation of coal has commenced. The Joggins mines are worked by horizontal levels. The proximity of this coal to the New Brunswick and American markets, and its favorable site, offer every encouragement to the company's operations. The opening of these resources will promote the agricultural industry of Cumberland, and finally establish a market for the produce of her farmers.

I might have adverted more at large upon the practical value of the smaller seams of coal occurring in different parts of the coal formation, but many of these are merely evidences of the existence of coal-measures; and to draw any inferences from them in regard to undiscovered strata, cannot be justified in the present state of our knowledge. The coal mines now worked, or about to be opened by the General Mining Association, are evidently the most valuable of any in British America; and none of the minor seams that have been accidentally discovered can maintain any competition with the thick strata of Pictou, Cumberland, and Sydney.

Cape Breton Coal Fields.—The carboniferous strata of Cape Breton occupy the western and south-eastern parts of the Island, and repose upon the gypsiferous sandstones of the centre from Sydney to the Gut of Can-

seau. They occupy a trough between the hypogene rocks of the north and south, into which the great Bras d'Or spreads its waters. The Sydney coal district is more extensive than that of Pictou. It reaches from the north side of Cow Bay to the northern part of Bourlardrie Island—a distance of 35 miles, and with an average breadth of $4\frac{1}{2}$ miles, including the inlets of the coast. It has been estimated by Richard Brown, Esq., an excellent geologist, to contain 120 square miles of land, containing workable beds of coal. The thickness of the coal measures is 1860 feet; millstone grit, 1800 feet; carboniferous limestone, 820 feet; total, 4480 feet. The most important mines are situated nine miles north of Sydney. About nine miles eastward of these mines, and near the entrance of Bridgeport Basin, at the head of Lingan Bay, are the Bridgeport mines, at present not in operation. Four miles westward of the Sydney mines are those of Bras d'Or in the channel of that name. Operations have also been suspended at this place. At the south end of this coal field, and nearly on a line with the above collieries, and on the northern side of Cow Bay, there is an ancient mine, which was worked by the French for the supply of Louisburg while they held possession of the Island.

Coal also appears at Inhabitants River and Coal Harbour, on the east side of the Gut of Canseau. At the former place the strata are nearly perpendicular, and small quantities of that mineral have been mined for domestic purposes. This district has been estimated to be seven miles long and three miles broad, but I believe it to be a part of the coal trough that runs through the Island. The coal field of the north-west part of the Island extends from St. George's Bay along the coast eastwardly to Chimney Corner, near the entrance of Margaree river. The area of this part of the coal field

has not yet been determined, nor have the thickness and value of the coal strata been ascertained. Its length is about 40 miles. The coal appears in the cliffs along the coast, falling in large masses to the beach, where it is washed away by the sea.

The greatest depth of the Sydney mine is 315 feet, and 225 feet below the tide level. The Bridgeport mines were drained by horizontal levels. The thickness of the coal-bed worked at Sydney is six feet. The dip at the northern end is 7° towards the north, 65° east; at the southern end it is north 80° east. The coal is worked by driving oblique headways from the main horse-gate, or on a level rising about 3° . The rooms are $16\frac{1}{2}$ feet wide, and pillars are left of the same breadth. The underlying shale abounds in fossils of the carboniferous group, especially ferns. Upright fossil trees also appear in the cliffs along the coast. Mr. Brown, the agent for the Mining Association, has a fine collection of these plants.

At Bridgeport the coal seam is 9 feet thick, and contains two thin partings of shale. At Little Bras d'Or the thickness is 4 feet, and the inclination is northeasterly seven degrees. The coal was raised by a horse gin. Three miles of railway have been required to convey the Sydney coal to the loading ground. The Bridgeport mines are on the sea shore, yet a mile and a half of railway is necessary to connect them with Bridgeport Basin. The Little Bras d'Or mine is only a few hundred feet from the channel, and 4 miles from its mouth. The loading ground is only adapted to small vessels. But a small quantity of coal has ever been mined at this place. It will be seen by this statement that the coal mines of Cape Breton possess facilities of shipping not rivalled in any part of the

world. The wages of the miner are the same at Pictou and Sydney. At the latter place only the coarse coal is sent to the market, and the price per chaldron put on board is 18s. A deduction is made to purchasers of large quantities. For domestic uses the coal is of a superior quality.

Exports of coal from Sydney and Bridgeport in—

1841,	\$1,670	} Chaldrons Newcastle measure.
1842,	98,616	
1844,	42,150	
1847,	26,129	

The Royal grant to the Duke of York required of him, his heirs, and assigns, the payment of a rent of one shilling sterling per ton on all coals, each ton to weigh 22 hundred weight of 120 pounds each, or 2620 pounds. It also required him to pay four pence for every ton of iron ore, or iron stone, and one-twentieth part of gold, silver, lead, copper, and all other ores and metals that might be raised. He was also required to prove that proper researches had been made within two years, and that mines had been opened in five years after the date of his grant, in order to render it valid. Of late a popular opinion has prevailed, that the Royal grant made to the Duke of York of the mines and minerals of Nova Scotia, was unwise, impolitic, and "improvident;" that it has created a monopoly, checked the discovery of useful minerals, retarded mining enterprise among the inhabitants, and withheld a proper revenue from the Province. I should lack candor were I not to acknowledge that with others I have been misled by the statements that have been put forth on this subject; and that opinions, adopted in the early period of the inquiry, have since been corrected by a careful and attentive investigation of all

the facts bearing upon the matter in question, without, however, compromising the opinion, that it was improper to alienate property vested in the crown for the good of the people.

Fortunately for the Province, the grant fell into the hands of a rich and influential company, and their management to an individual who has been a benefactor to the country. That company has expended a vast sum of money in the Province, improved the mines, protected the trade, and contributed in no ordinary degree to the revenue of Nova Scotia.

In regard to the Royalty paid to the Government, it has varied, and will continue to vary, according to the demand for, and the duty on, coals in the American markets. On the 25th of November, 1829, the Colonial Secretary wrote to Sir Peregrine Maitland, then Governor of the Province, that the rent to be paid by the General Mining Association was £3,333 6s. 8d., Halifax currency, for any quantity of coals not exceeding 20,000 chaldrons, and 2s. per chaldron royalty on the excess beyond that quantity. In his letter to Lord Falkland, of December 22d, 1842, the Hon. Samuel Cunard, agent of the Association, states: "The fixed annual rent for the privilege of raising 20,000 Newcastle chaldrons to be £3000 sterling, and 2s. currency for excess shipped beyond that quantity." Up to 1838 the Association raised in all 190,147 chaldrons, understood to be Winchester measure; and that the sales in every year did not amount to 20,000 Newcastle chaldrons. At the rate stated by Mr. Murray to Sir P. Maitland, this would have amounted to £36,665 15s., and at that put down by Mr. Cunard, £41,250 for the eleven years in which the Association had been operating.

By the official returns from the mining districts, it appears that there were mined and sold by the Association in 1842, a total of 39,333 chaldrons, Newcastle measure, which, at the rate paid in rent and royalty, would be £5,683 5s. From the difficulty of competing in the American market with the coals of the United States, under the tariff of 1842, Lord Stanley, on the 18th of February, 1843, communicated to Lord Falkland the decision of the Lords of the Treasury, to allow the Association for that year to raise 20,000 chaldrons beyond the number stipulated in their lease, free of charge for royalty; but it appears by the certified returns that they actually raised 33,550 Newcastle chaldrons for that year, which was a decrease of 5793 chaldrons on the preceding year's operations.

By the representations made to Lord Stanley on the 31st of January, 1844, he wrote to Lord Falkland, and gave him the power, if he thought proper to exercise it, of allowing the Association to raise 50,000 chaldrons, Newcastle measure, for a limited period, "say from five to ten years," on the payment of the stipulated sum of £3000 sterling. In answer, Lord Falkland assigned, as reasons for withholding this privilege, that the decision would embarrass the adjustment of the Civil List question, and that the indulgence granted the preceding year had not resulted in an increase of sales, but to the contrary. The offer, however, on the part of the Government, proves its regard for the growing enterprise of the Association, and a desire that it shall be able to sustain a competition in the American market. In the above year the Association obtained a charter.

The possession of the sign manual, and broad seal of Her Majesty, with the settlement of a long pending

suit in Chancery, between the crown and the assignees of the late Duke of York, are advantages on which the Association doubtless look with satisfaction. Those advantages are believed to have been due in no small degree to the indomitable skill and perseverance of the general agent of the Association.

In 1839 the Corporation had a capital of £250,000 invested in Nova Scotia and Cape Breton,—the shares are £20 each ; and have lately received a dividend of 8 per cent., which is understood to be the first that has been ever paid. Shares had been previously sold in London for £13 each. The settlement of the chancery suit has secured to the Association the coal mines of Cape Breton, which, it had been maintained, were not included in the grant made to the Duke of York. That settlement requires them to pay 9d. per chaldron for the coals raised on the Island. I have here drawn largely from a most able report on the coal trade, by Walter R. Johnston, Esq., of Philadelphia—the Journals of the House of Assembly, and official returns put in my hands by the general agent of the Association.

It will be seen by reference to those sources, that the appeal made to the Home Government afforded some relief to the Association, and they shew that the capitalists of London have been willing to forego all returns upon their investments to extend and secure their trade with the United States. The working of the mines has been reduced to the lowest rates, so that their success, and the great benefits they afford the Province, can only be retarded by the exaction of a depressing royalty, or a high foreign duty. The Association have now a capital of £400,000 in Nova Scotia and Cape Breton. On this investment only two small dividends have been paid ; and as early as 1839

£67,000 of interest was unpaid. 100,000 chaldrons of coals must be sold annually at all the mines to enable the shareholders to divide six per cent.*

I have stated that there are large tracts of land embraced by the old grants in which the coal, iron, and other minerals were not reserved to the crown. Consequently, to the minerals of such districts, the Association have no claims. The iron mines of Annapolis are on such lands. Fourteen years ago these mines were worked, and the iron was smelted; but the enterprise failed, and has never since been revived. Much of the rich iron of the Folly Mountains, in Londonderry, is beyond the limits of the company's property. This ore was known to exist forty years ago, but not until recently has any effort been made to bring it into use. It might rather be said that the proprietors of such mines enjoy a monopoly, for they are exempt from the royalty the Association would have to pay should they commence the smelting of iron upon lands embraced by their charter. I am of the opinion, that it would be sound policy, in the present condition of the Province, to relinquish all royalty on the ores of all the metals, and rather to offer a bounty upon their reduction and manufacture.

The minerals of New Brunswick are under the sole control of the Legislature, and open to the general competition of the inhabitants; yet, the mines are not worked, and will probably remain inactive until the timber resources have failed. The Mining Association have expended nearly £1,500,000 in Nova Scotia. Up to 31st December, 1847, they had paid into the Treasury £95,440 13s. 7d. in rent and royalty. For

* Journals of the House of Assembly for 1839.

1847 they paid £7,143 18s. 5d. They have now commenced the opening of the Cumberland mines, and the Province may look forward to a speedy export of the mineral resources of that county. It cannot be supposed that if the coal mines of Nova Scotia had been assigned to the capital and enterprise of the Province, they would have reached their present state of perfection, or yielded a revenue like the above in the existing state of the country. The amount of bread stuffs imported from the United States, and consumed in Nova Scotia, has been estimated at £90,000 per annum. That sum is nearly balanced by the supplies of coal, grindstones, gypsum, cordwood, and other natural and unmanufactured produce, sent hence to that country. The value of these resources can therefore scarcely be too highly estimated, and their development and application should receive the highest encouragement from the Government and every inhabitant of the Province.

A general survey of all these native elements of wealth is desirable, as it would evidently enlarge the sphere of industrial action, and tend to improve the state of agriculture and manufactures.

There is yet another consideration that should not be overlooked. It is the interest secured in the mother country in behalf of the Province. The coal of Nova Scotia is of great consequence to Great Britain, and the encouragement held out by the Colonial department to work the mines, is evidence of their estimation. The influence of a distinguished and wealthy body of men in London, who have a direct interest in the welfare of this country, is also of importance, and all tend to its safety and lasting attachment to the British Crown.

ORES OF THE COAL MEASURES.

Copper Ore.—Thin seams of copper ore are seen in the red sandstones of Minudie. At Tatmagouche, Carriboo, and the rivers of Pictou, small deposits of the sulphuret and green carbonate of copper have been found among the strata of the coal series. It is a curious fact that those ores are now the fossilizing materials of some of the large trees of the coal period. A few years ago, a copper mine was opened at Bathurst, in New Brunswick, and from it several tons of ore were removed. Upon examination, I found that the ore only occupied the site of a large fossil tree, lying prostrate between the strata of sandstone, and which had been transmuted into gray copper ore. The removal of this fossil completely exhausted the mine.

Copper trees occur at the above, and other places, and some of them have been worked for mineral veins. The ore is frequently compact, although it is often filtered into a coal, or lignite, in which the vegetable texture of the original wood remains distinct. Fossil trees, consisting of iron ore, are found in similar situations;—they have evidently been produced by the infiltration of water, holding copper, or iron, in solution; they are not evidences of the existence of valuable beds of iron.

Argillaceous Oxide of Iron, Clay Iron Stone, or Carbonate of Iron.—Strata of clay iron stone occur in the coal measures of Pictou and Cumberland. In some instances the iron is crystalized. In the nodules of clay iron stone, at the Joggins, I discovered crystals of galena, or lead ore. The clay iron stones afford the chief supplies of British iron; thin strata are worked, and the ore seldom yields more than 35 per cent. upon an aver-

age. The proximity of coal, iron, and limestone, in the carboniferous rocks, has justly been viewed as providential. The clay iron stone of Nova Scotia is ample for the purposes of smelting, independent of the richer ores of the older rocks.

Besides the minerals contained in the carboniferous series, many of the strata themselves are very valuable, as they afford superior grindstones, freestones, and flagstones. The entire coasts bordering upon Northumberland Strait and Chignecto Bay, present strata of gray, red, and chocolate colored sandstones. The Province Building, Dalhousie College, and other public edifices at Halifax, are built of the gray grits of the former shore, from which annual exports of grindstones are also made to the United States. Freestones are also exported from Cumberland. Flagstones of every thickness may be obtained from the cliffs fronting the sea. At Apple River, where the waves undermine the strata, smooth flags of hard sandstones, from an inch to four inches in thickness, and frequently containing 150 superficial feet, fall to the beach. Similar rocks also occur near Diligence river, at Parrsboro'. When first quarried, the freestones are readily cut and sculptured. They are much hardened by being exposed to the sun. Care and experience are requisite in selecting these freestones for building purposes, for some of the strata are incapable of resisting the vicissitudes of the weather.

Freestones are annually shipped from Shepody to the United States, yet they are in no wise superior to those of the Nova Scotia side of the channel. Grindstone grits are common, and they are most extensively cut at the South Joggins, in the county of Cumberland. During the summer season the manufacture of grindstones employs about 500 men, who reside in temporary huts scattered along the borders of the cliffs.

During the recess of the tide, the strata are broken near lower water mark, and large masses of rock are secured between boats, which, at high water, are lifted up and hauled to the shore, where the stone is cut into grindstones from four to six feet in diameter, and from ten to eighteen inches in thickness. These are called water-stone, and they are employed in the manufactories of the United States.

A smaller kind of grindstone is made from the sandstones situated above high water mark. The principal site of these operations is at a place called the "Bank Quarry," owned by Amos Seamen, Esq., of Minudie. A peculiar stratum at this place, called the "blue grit," is covered by 30 feet of gravel. The drift has been removed at much cost, and the stratum has been followed 200 yards by a level, and a railway running into the bank. After the rock has been blasted, it is removed to the cutting house, where it is speedily fashioned into grindstones, by the workmen. This labor might be advantageously executed by machinery. The grindstones from this quarry are superior to any other ever discovered in America; and besides being generally employed in the country, they meet with a ready sale in the American market, and in England. They are also made in the interior, and at "Ragged Reef," two miles farther south, between which place, and the Bank quarry, are the works of the Mining Association at the coal mines. The price of a stone 24 inches in diameter, and 4 inches thick, is from 2s. to 3s. at the quarries, and the larger kinds in proportion to their dimensions.

The number of grindstones exported from the county of Cumberland in the year ending 5th January, 1848, was 33,075, value @ 2s. 6d. each, £4134 7s. 6d. Grindstones, freestones, and other rocks employed in archi-

ture, are more abundant, and may be more readily brought into operation in Nova Scotia than in any other part of North America; they, therefore, rank among the valuable industrial resources of the Province.

Minerals of the Trap Rocks—Iron Ore of the Cobequid Mountains.—A rich and inexhaustible deposit of iron ore appears on the shore side of the Cobequid Mountains, as they are called—although, in reality, they are only hills, as they seldom exceed 200 feet in height. I made an examination of the ore at Folly Mountain, a part of the range, late in the autumn of 1845. The ore had been known to exist twenty years before, and the inhabitants had shipped small quantities of it to the United States, supposing it to be manganese.

The hills of the Folly river are chiefly composed of quartz rock, slate, and limestone, which have been pierced by dikes of trap. The direction of the strata is nearly east and west, and they are almost perpendicular. Although the ore runs parallel to the strata, it occupies a space quite irregular in its dimensions. The numerous branching veins that fill the adjoining limestone, slate, and trap, and the crystalline nature of the ore and its walls, are evidences that it was produced by injection. In other situations I found it associated with trap altogether. The compact ore is covered with iron in almost every stage of oxidization, or ochres, and its outcrop is marked by detached pieces of brown hematite, or hydrate of iron—the hematite being also found among the drift to the south.

At the above place, one, and perhaps both walls of the ore are composed of limestone, containing innumerable veins. It is mixed in all proportions, and on the surface both are seen in the progress of decomposition. I caused an excavation to be made across the principal vein to the distance of 20 feet, and to a depth of 8 feet,

but it did not reach either wall. At the deepest part of the pit the ore was compact; but still, from its proximity to the surface, it doubtless contains more oxygen than at lower depths. The thickness of the vein has not been ascertained with any degree of accuracy; but so far as an opinion can be formed, it varies from 20 to 80 feet, and at some points it is probably still wider. Its resources are therefore perfectly inexhaustible, and its association with the limestone required for a flux is peculiarly favorable.

The ore itself is the specular iron of several authors, and the specular oxide of iron of Cleveland. It is a pure peroxide of the metal, consisting of 69 of iron and 31 oxygen, in 100 parts of the ore, which will yield from 60 to 70 per cent. of cast metal. Its productiveness, however, cannot be fairly tested, except by the reduction of the ore upon a large scale. From its variable degrees of richness, some of the published assays, or analyses as they have been termed, are contradictory. It has been stated that this ore can be cast into steel at a single smelting; but I am of opinion that it will require a process similar to that devoted to the same ore in other countries. This kind of iron is not rare in primary and trappean rocks. In the Island of Elba it constitutes whole mountains. It is common in Sweden and Norway. In the United States it traverses gneiss and granite.

Since the foregoing observations were made, I have traced the iron ore along the southern front of the Cobequid hills to the distance of twenty miles; and probably its range is of still greater extent. It crosses the Big Village river, in Londonderry, and between that stream and the Folly, as it is *ironically* called, the ore evidently exists in mountain masses. It may also be seen in small quantities on the road crossing the mountain towards

the River Philip. Farther west, in the township of Economy, it is said to be plentiful. It has been found in the forests bordering upon the Chiganois, and north river of Onslow, and on the higher lands westward of the road between River John and Archibald's Inn, on the road between Truro and Pictou. I found the best evidences of its easterly extension about two and a half miles from the Inn. The ores taken from those several places agree in their general characters, and evidently belong to the same wide-spread dike, or vein.

This is the richest and most valuable deposit of iron ore found in the Province, and the advantages it offers for smelting and manufacture are unrivalled. Its whole line is covered by the native forest, from which may be obtained abundant supplies of fuel, and charcoal for the manufacture of steel. The coal-measures also approach the ore within the distance of a mile; and at one site at least there is a workable bed of coal already discovered, and within two and a half miles of the vein. The Cobequid hills, and also the ore, are pierced by several streams, of sufficient magnitude to carry powerful machinery; and Minas Basin, from which a part of the vein is not to exceed eight miles distant, offers a free channel of exportation. The Big Village and the Folly Rivers are, perhaps, most conveniently situated for the above objects. With abundant supplies of rich ore, situated at the surface of the earth, where it may be readily quarried, at the very sites of powerful hydraulic forces, is it possible that the Cobequid iron will fail in drawing out the enterprise of the inhabitants of Nova Scotia, and persons of capital abroad? Will it indeed be allowed to remain in the earth an inert and worthless mass, while the demand for railway iron alone is constantly multiplying the furnaces of other countries, and the Province is

supplied with iron from a foreign power. The iron ores of Great Britain do not yield on an average more than 35 per cent. of cast metal;—many of them are taken from the clay iron-stone beds of the coal fields—scarcely exceeding a foot in thickness, and from great depths.

A tract of land, containing a part of the vein at the Folly Mountain, was purchased by John Ross, Esq., in 1845, and a suitable site on the river was also secured by him for the purpose of smelting the ore. An Act of the Legislature has since been obtained, incorporating the Londonderry Mining Company, and a number of capitalists have been enlisted to carry on the work. At this site, and others adjoining, the iron was not reserved to the crown in the grants of land. The ore is also abundant on the mining property of the General Mining Association of London, who, since its discovery, it is hoped will take early measures to establish furnaces, and bring it into use.

We may now briefly advert to the trap rocks skirting the south side of the Bay of Fundy, and also forming the Capes and Islands of the Township of Parrsboro'. These minerals are numerous, but they are valuable as objects of science and curiosity rather than for their intrinsic properties.

The veins of magnetic iron ore at Parrsboro', Blomidon, and Digby Neck, cannot be profitably worked. The same may be stated of the manganese. The amethysts, agates, and jaspers, are very beautiful when polished. The trap rocks of Cape d'Or and Peter's Point occasionally contain small pieces of native copper; yet, from a careful examination where that metal occurs, I have been led to the opinion that it does not exist in any workable quantity at either of those places. I have recently discovered veins of the sulphate

of barytes in the trap rocks of Cape Chignecto. This mineral may hereafter be manufactured into pigments. All the minerals of the trap have been described.* From being peculiar to the country, a new variety found at Parrsboro', has been called *Acadialite*, in honor of ancient Acadia. The following minerals are found in the trap rocks of Nova Scotia :—

Acadialite,	Hairstone,
Agate,	Heliotrope,
Albin,	Heulandite,
Amethyst,	Hogtooth Spar,
Amethystine Sinter,	Hornstone.
Analcime,	
Apophyllite,	Iron, magnetic oxide of
Aragonite,	“ specular oxide of
Augite.	“ hydrate of
	Jasper,
Basalt,	“ red,
Barytes, sulphate of	“ ribband.
Calcareous Spar,	Ledererite,
Chalcedony,	Laumonite,
Carbonate of Iron,	Lead, sulphuret.
Carnelian,	
Cachalong,	Manganese, gray oxide
Chalcedony,	Mesotype.
Carbonate of Lime,	
Chlorite,	Needlestone.
Chabasie,	
Chlorophæite,	Opal, semiopal,
Copper, pure native,	Onyx, sgate.
“ green carbonate,	
“ blue carbonate,	Phrenite.
“ sulphuret,	
“ red oxide.	Quartz.
Gypsum, compact,	Selenite,
“ anhydrous,	Silicious Sinter,
“ fibrous,	Stilbite.
“ black,	
“ white,	Tremolite.
“ red.	Zcolite.

* See Gesner's Geology and Mineralogy of Nova Scotia. Halifax : Gossip & Coade, 1836.

The highly crystalized state, and the curious associations of these minerals, render them extremely interesting to the mineralogist. In the spring, when the rocks have been fractured and dilapidated by the previous winter's frost, many of them may be readily collected on the shores. The visitor, however, should be cautious in approaching the cliffs early in the spring, when immense masses of rock fall headlong into the sea, or cover the shores with rubbish. The trap rocks present some of the most majestic scenery in the Province. Perpendicular precipices, sometimes 400 feet high, front the shore, and brooks fall in shower baths from the summits of lofty basaltic columns. The minerals and scenery of the district have attracted many visitors to the country, and will ever be of interest to the traveller and man of science.

Building Stones.—Among the varied productions of the mineral kingdom, rocks adapted to architectural purposes, hold an important rank. In the densely populated districts of Europe, and where wood is at once scarce and costly, quarries of such rocks are very valuable. In new countries like Nova Scotia, where there is an abundance of timber, and buildings are therefore constructed of wood, freestones and other durable rocks are neglected, and they will remain so to a greater or less extent, until the chief parts of the forests have been felled, and the native wood falls below certain dimensions, and its price rises above its real value, as compared with more durable materials.

Nova Scotia is abundantly stored with the peculiar strata, adapted to the construction of buildings of every description, and also the calcareous and argillaceous compounds employed for cements, or mortars. The relative facilities by which these materials may be obtained, and which will always affect their prices, will

also press itself upon the consideration of the builder. The facilities for obtaining building stones are general, and the best freestones are admirably presented for quarrying and transportation—circumstances to be attributed to the great extent of the coal fields in which they occur.

The practice of selecting such stones as yield most readily to the chisel, and are therefore called freestones, has, in Europe, led to serious errors. Formerly the mineralogical characters of such rocks were disregarded: hence many beautiful edifices are seen crumbling to the ground from the decomposing influence of the atmosphere, moisture, and other meteoric agents. At the present period a better system prevails, and both the geologist and mineralogist are employed in determining the characters of the rocks intended for buildings. In some parts of Europe, stately mansions are undergoing decay, while the humble cottages taken from the same quarry, but composed of stones that were rejected because they yielded less readily to the sculptor's chisel, are found to be durable.

It is melancholy to observe in the old country the number of churches, cathedrals, abbeys, and public edifices, that are mouldering away from the inattention or ignorance of their builders. Indeed it appears that the Normans paid little attention to the quality of the stone, which was usually taken from the nearest quarry. In their time the mineralogical characters of rocks employed for buildings were very imperfectly understood;—indeed it is surprising that many edifices have lasted so long. The carbon contained in the smoke and soot, bountifully distributed in large towns, contributes to the preservation of some of the freestones. In retired situations lichens will frequently creep over

the surface of a building of stone, and protect it in some degree from decay. Such lichens are, however, less common in America than in the climates of the old country.

In estimating the durability of any stone to resist decomposition, or disintegration, its coarseness, or fineness must be taken into consideration independent of its chemical nature. Formerly the choice of rocks was left with the builder, or mason who generally selected such masses as were readily worked, without much regard to their durability. Even in some of the most compact granites the feldspar will crumble away and leave the stone porous and friable.

All quarries should be carefully inspected by a mineralogist, whose science is not less useful in this than in other branches of his department.

To these remarks it is only necessary to add a list of the principal building materials, and the earthy substances used in the arts and manufactures—the sites of which have already been noticed :—

Granite,	Red Sandstone,
Sienite,	Freestones,
Porphyry,	“ gray,
Serpentine,	“ brown,
Limestone,	“ chocolate col'd.
Marble,	“ blue grit.
Grindstone,	Sand,
Flagstone,	Clay,
Paving Stones,	Potter's Clay,
Roofing Slate,	Fire Clay,
Trap Rock,	Alum Slate, }
Quartzite,	Alum Clay, } *
Grauwacke,	Ochres.

* There are alum and copperas slates in the neighbourhood of Halifax. Alum clay sometimes occurs at the bottom of peat bogs. Some of these clays are sulphurous.

CHAPTER X.

CAPE-BRETON.

General description of—Climate—Early Exports—Louisburg—History of—Fortifications—Ruins—The Bras d'Or, situation, Settlements—Resources—Bourlardrie—Sydney harbour, coal, coal mines, town, soil, agriculture—Lingan—Mira Bay and River—Gabus—Isle Madame—Arichat—Carabacou—Gut of Canseau—Port Hood—Cheticamp—Inganish—Cape North, Mountains of—Unexplored Lands—Fisheries—Exports—Shipping.

It is now necessary to give some account of the Island of Cape Breton, which forms a valuable part of the Province, and equals the main land in natural resources. Abounding in coal, limestone, gypsum, and other minerals, the soil is fertile, except at its northern and mountainous extremity, and along a part of its Atlantic side between Isle Madame and Gabarus Bay. There is also some boggy ground in the interior. The southern and western shores abound in harbours, and the deep Bras d'Or penetrates the very centre of the Island, extending its navigation into the remote forests and to inexhaustible strata of mineral fuel. The waters also teem with fish of every variety, and the inland districts still afford supplies of excellent timber.

The climate of Cape-Breton is similar to that of Nova Scotia proper. It ripens all kinds of grain, Indian corn, and all the staple fruits and vegetables of North America. The accounts given by some of the early

geographers of this fine Island are yearly contradicted by experience ; and although the winters are long and severe, the summer is warm, and vegetation is correspondingly rapid. The resources of the Island are but imperfectly known. An adequate account of its agricultural capabilities, mineral wealth, and fisheries, has never been given, nor cannot now be made except by a general public exploration.

Cape-Breton, originally called Isle Royale, was first discovered by John Cabot, a Bristol navigator. The early *voyageurs* to it were from Bretagne, in France : hence the origin of its present name. France always considered this Island as the key to the St. Lawrence, and she expended 30,000,000 of livres in the fortification of the capital, Louisburg, so called in honor of her sovereign.

During its occupation by the French, it exported 5,800,000 quintals of fish annually, and 600 vessels were employed in its trade and fisheries. But the security it offered to the fleets of a rival power, and the Indians who aided the French in their attacks upon the British settlements, the value of its position and fisheries, excited a determined spirit of hostility against it ; and a fortress, considered to be impregnable, was taken by the enthusiastic colonists of New England, under Colonel Pepperall, who were excited to the enterprise by Whitfield's hatred of papacy. In 1747 the Island again reverted to the French, but was regained by General Amherst, in 1758, and finally secured to the English, who afterwards razed the fortifications to the ground. The brave Wolfe distinguished himself at the second conquest. The busy town, with its lofty cathedral, and theatre, once flocked with inhabitants, and the crews of hundreds of ships, has long since dis-



appeared. The high walls that bristled with cannon, the ditch, the glacis and portcullis, have almost disappeared—the bomb-proofs and magazine have become sheepfolds, and the stronghold of the French in America is a heap of rubbish, overgrown with lichens.

I had an opportunity of visiting the ruins of Louisburg, the ancient capital of Acadia, in November last. The town and fortifications have been described by Mr. Halliburton, in his history of Nova Scotia. The light-house on the northern side of the entrance of the harbour stands on a bold rocky cliff, once occupied by a strong battery. The dilapidated walls of the great battery of forty guns on the northern side of the harbor, and another on the opposite shore, now appear like natural mounds, being covered with clover, and other grasses. The little island at the harbor's mouth has yielded to the operations of the waves, and a part of the fortification has fallen into the sea ; but the walls, intrenchments, and the town of Louisburg—the missiles—the blown up batteries—levelled city, and the bleached bones of the dead, now seen mingled with the soil, best show the sacrifices made to secure the advantages of the situation. The arched places of arms, and bomb-proofs of the citadel, are still entire. Three of them are sheepfolds—another is occupied by a fisherman for a cabbage cellar, and time has incrustated the ceilings of all with small stalactites. The foundations of the barracks, chapels, the nunnery, hospital, and other public buildings, are still perfect ; and the cells of the prison are almost unbroken, as is also the kiln of a large brewery. The present inhabitants are supplied with water from the Governor's well, and the walls of some of the buildings and chimneys are twelve feet high.

Outside of the principal line of fortifications there is a peat bog from one-half to three-quarters of a mile in width. At a small mound of gravel in the bog, and within 400 yards of the citadel, I observed the remains of the breastwork thrown up by the Provincials previous to their capture of the place under Colonel Pepperall. The bog extends across the peninsula from the harbour to the sea. Colonel Cochran, an uncle of the present Earl of Dundonald, fell in approaching the fortress along the line of the sea wall.

Louisburg was built upon a peat bog. The peat now appears in the ditches, cut by the present inhabitants. The ancient city is now occupied by half a dozen poor fishermen and their families, who raise a few potatoes and cabbages in the old gardens and between the walls of the fallen buildings. The houses and sides of the fortifications were chiefly built of a porphyritic trap—a prevailing rock here. The quarry is seen about half a mile from the town. The stones were employed in their rough state. With them I found a handsome cut rock, closely resembling the Portland stone of England. I have been informed that this rock was obtained by the French at Mira River, but I have never seen any like it in America. Pieces of fine polished marble were also found among the ruins of the Governor's dwelling. Among the relics I brought from the place, there is one half of a bomb-shell, 13 inches in diameter, cannon and musket balls, flints, hand granades, double-headed shot, locks, hinges, keys, axes, "*creepers*" for walking on ice, &c. I also found a copper coin of Louis XIV. The space within the walls has an area of about 50 square acres.

To demolish the fortifications of Louisburg, the British Government expended £10,000. The effects

of powerful blasting are to be seen everywhere, yet parts of the batteries are still 20 feet high. It is impossible to visit these ruins and not feel a deep regret that the city should have been thus destroyed, the port itself being very advantageously situated for prosecuting the fisheries. There is no doubt the work of destruction sprung from the hatred of the provincials, many of whose relatives had been barbarously treated, and murdered within its walls, rather than from a policy that called for its demolition.

The country surrounding the harbor is low and rocky. It does not appear that the French inhabitants ever made any attempt to cultivate the soil—their substance was drawn from the fisheries. The shores are now but thinly inhabited, and the inhabitants are sustained by the productions of the sea, and a coasting trade in coals. From Louisburg to Mira River, and thence to Sydney, there is a good road, and the lands are of excellent quality.

The Island of Cape-Breton is about 100 miles in length—the greatest breadth is 60 miles. The coast circuit is nearly 300 miles; and, excepting the western shore, it is remarkable for its deep bays and narrow promontories. It embraces an area of 2,000,000 of acres, of which, perhaps, 1,300,000 acres are fit for cultivation.

The Island is remarkable for a Mediterranean seventy miles in length, called the Bras d'Or, which opens into the sea between St. Ann's Bay and Sydney; and, excepting an isthmus 400 yards wide, at St. Peters, it divides the land into two unequal portions. The Gulf has the Island of Boulardrie at its mouth, and which divides it into two channels. The lesser passage will not admit large vessels. The great Bras

d'Or and its entrance are navigable for ships of the line.

This beautiful sheet of water expands itself into many bays and inlets, through the central portion of the Island, affording a safe and easy communication with its shores and the main ocean. Its northern arm terminates at Whycocomagh, besides which we have Waatchaktcht, Malagawaalchkt, and Edoobekuk bays, that still retain their Indian names. The most southerly and narrowest passage is called Little Bras d'Or, which, uniting with the great inlet, forms an expanded and very beautiful lake-like sea. About seventeen miles from the entrance of the main channel, which will scarcely exceed three quarters of a mile in breadth, the granite is succeeded by conglomerate, limestone, and thick beds of gypsum—the latter appears in cliffs upon the shores.

The Island of Boulardrie belongs to the coal field; and coal, limestone, and gypsum, appear further westward. Excepting a few flourishing settlements, the shores of the Bras d'Or are but thinly inhabited; and on long lines of the lake border there is not a human habitation. The beauty of the bays, with their thick wooded Islands and gently sloping shores, can be better imagined than described; and when their resources are considered, the gulf justly deserves the title of an arm of gold. The soil is of good quality, and there is much good timber at inconsiderable distances from the inflowing streams.

Excepting the west coast, the Island abounds in fine harbours, and the shores are peculiarly favorable for the occupation of the fisheries. Since the fall of Louisburg, Sydney has been the capital. The entrance to the harbour is wide, and the shores present chains of

small farms, cultivated by Highlanders. The rocks all belong to the coal series, containing coal, and a great variety of the beautiful fossils belonging to the carboniferous group. North Sydney, or the loading ground, as it is called, is a snug village, and the sea terminus of the rail-way from the mines, three miles distant. The coal is delivered on board the vessels by allowing it to fall directly from the rail cars in their holds. In the neighborhood of the mines, and extending westerly up the side of the harbour, there are a number of fine farms, and agriculture is steadily progressing. At the time of my visit, there were thirty square-rigged vessels in the harbour,—most of them were from the United States, and employed in the coal trade.

Sydney is built upon a peninsula, in another arm of the harbour, five miles to the south. On its extremity there is a block-house, and a small battery, with barracks, occupied by soldiers. On the precincts of the town there are well-cultivated fields, and the opposite side of the estuary displays the progress of husbandry and good taste. The lands in all directions are capable of a high degree of cultivation, but they are still in a wilderness state, except along the borders of the bays, and some of the principal streams. A small steamer runs constantly between North and South Sydney, and the employment of a regular mail and passage steamboat between the Port and Halifax has greatly promoted a communication with this valuable section of Nova Scotia. Besides its vast supplies of coal, and a good agricultural surface, Sydney is very favorably situated for the prosecution of the fisheries and general commerce. That it has advanced but slowly, may therefore excite surprise; but, like other parts of the Island, its advantages and resources are almost unknown, even in the neighbouring Provinces. In Great Britain the climate and general character of

Cape Breton have been misrepresented; and while great efforts have been made to bring into operation the elements of wealth in other colonies, those of this valuable portion of her Majesty's possessions remain unimproved. In no part of British America is there a more promising field for a respectable class of immigrants, and the application of capital to the developement of the natural productions of the sea and land. A full account of the Island and its resources is still a desideratum in colonial literature.

Lingan is a fine open Bay, but a shoal, situated across its mouth, renders it inaccessible for ships of heavy burthen. The land is excellent, and where it is not settled there is much marketable timber. Near Cow Bay Head the cliffs fronting the sea contain thick strata of coal, which constantly falls to the beach, and is washed away. Some of the coal has been reduced to cinders by fire. Miré Bay is a beautiful sheet of water, which receives a river of the same name flowing in from the westward forty miles. The Island of Scatarie, situated off the Bay, is usually the first land made by vessels bound to this part of America. It has been the theatre of many shipwrecks. The soil is rocky and barren. Mainadieu, a small harbour sheltered by the Island, is occupied by a number of families, who are actively employed in the coal trade and fisheries.

Port Nuevo, the south-eastern extremity of the Island, is low; thence westward the shore is uneven.

Gabarus is a deep bay. The shores in this quarter were settled by American loyalists, and their descendants have greatly improved the features of the country. From this place to St. Esprit the shores consist of red sandstones, which always indicate a good soil. It has been stated that the interior lands in this quarter are barren, yet this opinion may have arisen from the gloomy aspect produced by fires that destroy the herbage. At Grand

River the soil is of good quality, and a settlement of Scotch emigrants are rapidly extending cultivation.

The remaining part of the shore to the Gut of Canseau is broken into small bays and inlets, many of which are settled by the descendants of the Acadian French. These people cultivate small farms, and engage actively in the fisheries. Isle Madame is separated from the main Island by Lennox passage, which is dotted with pretty islands. Madame is sixteen miles long. Every advantage is here offered for the prosecution of the rich fisheries, but the soil on the Atlantic shore is scanty and rather meagre.

Arichat has long been celebrated for its exports of the produce of the sea. The present population will exceed 3000, chiefly Acadians. The trade is carried on principally by merchants from Jersey, who employ the inhabitants in taking and curing the fish. In 1828, 39,200 quintals of dry cod, and 12,559 barrels of pickled fish were exported; and in 1833, 2000 tons of shipping were built at this port, (Murray.) The border of the Gut of Canseau, on the Cape Breton shore, is thickly settled by highlanders. This coast also has excellent harbours. Caribou cove is a splendid haven, and coal is seen at Coal Harbor and the River Inhabitants. During my excursion up this river, I observed a fish upwards of 20 feet in length, on the shore. Upon examination it was found to be the *Anarnacus Greenlandicus*, a species of the Narwhal. It is called the black fish, by the inhabitants, who frequently capture it for the oil. It visits this and other rivers annually.

The Scotch settlement continues to the excellent harbour of Port Hood, the county town for the northern district. Still farther on the shore becomes bold and precipitous. The abrupt headland of Cape Mabou affords a harbour for small vessels. The inhabitants are American loyalists, Scotch, and Irish. The banks

of Marguerie, or Salmon river, fifty miles north of Port Hood, is occupied by flourishing settlements of Acadians, who are also scattered along the coast as far as Cheticamp, where the Jersey merchants have another fishing station. The remaining part of the coast is but thinly inhabited, and there is no shelter for vessels. A large tract of country in the northern part of the Island is occupied by lofty mountains of granitic and trappean rocks. This tract has never been explored, and I have only had an opportunity of making a few hasty observations along a part of the coast. The whole shore from Cape St. Lawrence to Cape North, and thence to Ingonish, presents perpendicular cliffs of granite and other igneous masses, which descend into the sea without a beach border; and at numerous sites a landing cannot be effected, even in calm weather. Against the shelving cliffs of granite and basaltic columns of trap, the sea dashes with terrific violence. This part of the Island is the highest land in Nova Scotia. Some of the mountains exceed 1200 feet in height. Between them there are deep gorges, flanked by almost vertical precipices reaching from the level of the sea to the summits of the mountains, some of which are levelled off at their tops. The ice and snow of winter form glaciers, the *debris* of which is seen in the vallies. The scenery is majestic beyond any in the Province. The soil on the slopes is very scanty, and the summits of the hills consist of naked rock, undecked even by the hardy moss. About two miles north-east of Cape North is a steep naked rock, called St. Paul Island, at which thousands of seamen have perished. It is one of the most dangerous rocks upon the whole coast. Human bones, and even coins, are frequently seen along its sides, upon which many a noble ship has been dashed to atoms. Galena, or lead ore, is found in the rocks. St. Ann's harbour has a narrow inlet, but it is, perhaps, one of the safest havens

in America. The soil on its shores is good, and the scenery is very bold and picturesque.

I have already adverted to the fisheries of Cape Breton and to the mines in the chapter devoted to that subject. It is quite evident from the nature of the rocks, that the soils of the Island have been underrated; and it appears from several reports that the agricultural capabilities of this portion of Nova Scotia are fully equal to those of the main land, if they are not superior. The mixed employment of agriculture, fishing, and lumbering, have retarded husbandry; and the tillage of the soil is evidently far behind that of the western counties of the Province. It is on this account that we hear of more or less annual lack of provisions. This does not arise from the sterility of the soil, as some have supposed. The descendants of the Acadian French never till their lands upon a large scale; and emigrants from the highlands of Scotland are less skilful and persevering in their industry than their own descendants, or those of the old New England settlers.

The position of Cape Breton in regard to the fisheries of the North American coast is peculiarly favorable. To this may be added the number and safety of its harbours—the abundance of fish that frequent the coasts, and its advantages for capturing seals. The coal mines also are sources of wealth, and the interior lands abound in timber. With all these advantages, the Island will bear no comparison with other, but less favored parts of North America. Its resources are not known nor appreciated abroad, and such as have been discovered are very inadequately improved. The coasts are much exposed to smugglers and trespassers upon the fisheries; the prosperity of the Island, therefore, depends as much upon its maritime protection as upon the encouragement offered to internal industry. The following tables will aid in making an estimate of its lawful commerce :—

PORT OF SYDNEY.

An Account of the Tonnage and value of Imports and Exports at the Port of Sydney for the year ended 5th January, 1844.

	IMPORTS.			EXPORTS.		
	Ships	Tons	Stg Value	Ships	Tons	Stg Value
Great Britain	5	1081	£10,987	3	344	£2405
British North America .	191	18078	4,936	194	17497	23,891
British West Indies . . .	1	178		2	611	286
Foreign Europe	6	1606	71	1	120	79
United States of America	53	7383	3,361	97	13505	9,387
Mexican Ports				3	988	468
Colonies of France	40	3167	485	8	373	221
Ports of Nova Scotia . . .	441	25111	33,449	446	24132	38,444
Total	737	56488	£53,360	754	57620	£75,182

An Account of Coals exported in the year ended 5th Jan'y., 1844.

To the United States of America, . .	11,668	chaldrons.
British North American Colonies, . .	14,994	"
Ports in Nova Scotia,	20,060	"
British West Indies,	382	"
St. Pierre and Miquelon,	92	"
Vera Cruz,	624	"
Foreign Europe,	106	"
Total,	47,926	chaldrons.

PORT OF ARICHAT.

An Abstract Account of the tonnage and value of Imports and Exports at the Port of Arichat, for the year ended 5th Jan'y., 1844.

	IMPORTS.			EXPORTS.		
	Ships	Tons	Stg Value	Ships	Tons	Stg Value
Great Britain	7	2139	£1,953	2	197	£ 400
Jersey and Guernsey . .	7	824	3,170	16	100	1,056
British North America .	83	4067	6,448	121	6617	19,527
British West Indies . . .				4	493	5,207
Foreign Europe	1	131	85	3	394	3,000
United States of America	19	2603	1,098	4	553	909
Brazil, Cuba, &c., &c. . .	9	491	767	2	205	2,173
Ports in Nova Scotia . .	116	5842	15,200	146	7077	11,353
Total	252	15097	£28,721	284	15636	£43,526*

*Simmonds' Colonial Magazine, 1844.

A glance at the map would almost satisfy the inveterate sceptic, that no where can there be found a position so favorable for maritime pursuits as that of Cape Breton. It was with this view that France expended her millions of livres in fortifying Louisburg. Where are there to be found such harbours, mines, fisheries, facilities of inland transport, materials for ships, and schools for seamen ; and to these has been added a soil capable of yielding the ordinary bounties produced by husbandry. By what mysterious agencies are these vast industrial resources withheld from the swollen population of the parent country—grown turbulent from the want of food—disaffected from the lack of employment ? When will Britain expand her labour in this direction, and strengthen herself upon lands only seven days sail from her shores ? The invitation of the scattered population is, come—come and help us to redeem these fertile lands, and sweep from the ocean the fish now purloined by foreign powers ;—come and help us to maintain the institutions that were so dear to our forefathers, and the sovereignty under which we have lived and choose to die.

CHAPTER XI.

RAILWAYS AND EMIGRATION.

Proposed Halifax and Quebec Railway—origin of, narrative of proceedings—Proposed terminus at Whitehaven—Survey—direction of—Resources along the line—Branches—Effects upon industry—cost—advantages, &c.—Halifax and Windsor Railway—Proposed Railways in New Brunswick—Electric Telegraph—Emigration, present state of, promoted by railways—Classes of Emigrants—Vacant Lands—General and concluding remarks.

It is now universally admitted that the introduction of railways into her Majesty's colonies in North America is of the utmost consequence to their future prosperity and safety. The idea of forming a continuous communication between Great Britain and China by steam navigation and railways, first suggested itself to McTaggart. It also occurs in Lord Durham's, and other reports on Canada. But up to January, 1845, no attempt had ever been made to give this idea a reality. It appears that the first person in England who made any effort to direct the attention of the Government to this subject, and bring the matter under public consideration, was Sir Richard Broun, one of the Baronets of Nova Scotia, who, at the above period, was engaged in forming a colonization company which would unite in the interests of those Baronets—the revival of whose order has been a subject of serious consideration,—the commutation of their claims having been reduced volun-

tarily to two and a half millions of acres of wild land, which the Baronets propose to settle without delay.

Sir Richard Broun entered into correspondence with Mr. William Bridges, Secretary of the Cork and Fermoy Railway, since abandoned. The magnitude and advantages of the work soon gave it sufficient popularity to produce action. A provisional committee was formed in London, from whom have emanated several applications made to Parliament and the colonies for aid in the gigantic undertaking.

A part of the provisional committee in London waited upon Lord Stanley, who informed them that the Government would forward their views if the colonies themselves would support the scheme. In July, 1845, letters were addressed to the Governors of Canada, Nova Scotia, and New Brunswick, who responded favorably to the proposal. A correspondence was opened with influential individuals, and persons best acquainted with the physical features of the country. A local committee was recommended for Halifax, and the most wealthy individuals in Nova Scotia and in the eastern part of New Brunswick expressed a willingness to aid in the work. Meetings were held at Halifax, and in different counties of the Province, all approving of the noble enterprise. The Press was also active in its behalf. But unfortunately the London committee assumed a position distasteful to Nova Scotia, and the committee that had been recommended for it were overlooked. Prospectuses were printed and widely circulated, bearing upon them the names of gentlemen, who were published as directors, or members of the local committees, without their knowledge or consent. A Judge of the Supreme Court publicly forbade the further use of his name in this manner. The proceedings began to be viewed with distrust, and from them the capitalists of the Province

have since stood aloof. Discords also arose in the provisional committees in London, whose labours fell into a disrepute from which they have not been relieved up to the present time. The Home and Colonial Governments have nevertheless continued their interest in the subject, and through their agency an exploratory survey has been made for a railway between Halifax and Quebec. The report of the military engineers appointed to make the survey, has been made public. It is extremely favorable to the enterprize; and Earl Grey, the present Colonial minister, has expressed his approbation of this great national work as being necessary for the successful colonization of the country. The Legislature of Nova Scotia has collected a great amount of valuable information in reference to the actual travel and transport between the capital and Windsor, and between the isthmus of Cumberland and Halifax.

There can be little doubt that in the event of a railway being constructed between Halifax and Quebec, the former would soon rise to be one of the first commercial ports in America. The advantages that would also be given to the Province would soon place her upon a par with the most thriving States upon the Great Continent. Nor would New Brunswick and Canada receive fewer benefits from the accomplishment of the enterprise.

Immediately after the prospectuses of the Halifax and Quebec Railway had been published, a part of the inhabitants of St. John and Fredericton proposed the construction of a railway between those places, and between Fredericton and the Grand Falls. A company was accordingly formed for that purpose, and a bill was obtained from the Legislature of New Brunswick incorporating the "New Brunswick Railway Company." A witty writer in London has proposed that this should be chartered as "The Grand Fall Railway," and says :

"there is something monstrously ridiculous, in the infantile stage of the colony's life, to think of connecting a city, having a population of not over 30,000 inhabitants, with a rock in the wilderness 190 miles." To this it might be added, that a railway, running along the border of a fine navigable river, in a new country, where the chief export is timber—which would continue to be floated upon the water, can offer little hope of profit. A railway from St. John to the Peticodiac, thence to Shediac, and others, have also been proposed and highly recommended in New Brunswick.

The lack of funds to commence the New Brunswick Railway caused a diversion in favor of St. Andrews, a small town on the British side of the American boundary. The St. Andrews and Quebec Railway Company was incorporated in 1836, and the survey cost the British Government £10,000. After a lapse of ten years, the proposition to run a railway from St. Andrews to the Grand Falls and to Quebec, "if necessary, was revived," it being considered as in direct opposition to the Halifax and Quebec line. It has been gravely stated that "the proceedings of the company were arrested in consequence of the disputes with the United States." The boundary dispute was settled by Lord Ashburton in 1842. The revival of this railway does not appear until 1845, and after the Halifax and Quebec line had been proposed in London. The treaty of Lord Ashburton gave to the Americans lands upon which the line had been surveyed, and the national advantages of constructing a railway through the wilderness along the American boundary, remain to be discovered. The company have, however, commenced the construction of the work, in

which the laborers themselves are solicited, and "expected" to take shares.

The inhabitants of Nova Scotia rejoice in the success of every public undertaking in the colonies; but when an object is disingenuously held up in opposition to a work of so much importance to the general welfare as that of the Halifax and Quebec Railway, they have a right to inquire into the motives that direct it. There can be no doubt that the St. Andrews Railway at the onset would operate against the interests of an eastern line, and vice versa. It was therefore proposed to divert the terminus of the railway from Nova Scotia to Canada away from Halifax. It is to be regretted that Sir William Colebrooke, the late Governor of New Brunswick, should have given his support to an act so dishonorable, and directly opposed to the general interests of Her Majesty's subjects in these colonies. To paralyze the efforts and withhold the capital of the inhabitants of Halifax—to neutralize the influence of all the people of the western part of Nova Scotia, and thereby check the progress of the Halifax and Quebec Railway,—Halifax, with one of the finest harbours in the world, well populated, strongly fortified, and garrisoned, with an immense agricultural country in the rear, and the first landing place for steamers from Great Britain, was to be exchanged for a little summer haven, on a desolate part of the coast near Canseau. Canseau itself was first selected, and the drift ice of that place scarcely formed an objection to making it the coast outlet of a railway nearly 650 miles in length.

In the early part of 1846 a public meeting was held at St. Andrews, and stock to the amount of £30,000 was subscribed for the St. Andrews and Grand Falls Railway. The Hon. Capt. Owen in the chair spoke

at length upon the great advantages of the harbour of St. Andrews beyond every other part for uniting the Atlantic with the St. Lawrence. This individual owns the chief part of the Island of Campo Bello, and at the time was prosecuting the survey of the coasts of Nova Scotia under orders from the Admiralty. A survey, or nautical exploration of Canseau, and every other place eastward of Halifax suitable for the terminus of the Great Railway to Quebec, was determined upon, and in the succeeding summer various reports were made from Capt. Owen to Sir William Colebrooke, disapproving of Halifax, and recommending, not Canseau, but Whitehaven, a small inlet westward of Canseau, as being "not only the most conveniently situated, but a splendid and most commodious port," free from ice, "and whose natural facilities of attainment greatly exceed those of Halifax. No less than three reports in praise of Whitehaven and in condemnation of Halifax, were officially published in New Brunswick. The objects of this nautical survey, and the reports that followed, are too apparent to need any comment. In the summer of 1847, the Hon. Samuel Cunard and the Hon. James B. Uniacke were examined before a committee of the House of Lords in reference to the colonization of British America in connexion with railways.* The extensive knowledge and experience of those gentlemen have no doubt corrected more than one erroneous opinion in regard to the subject then under their consideration; but other statements have had a tendency to distract the public mind, and divert the attention of the Imperial and Colonial Parliaments away from a most essential medium of colonial im-

*See Report Select Committee House of Lords, No. 737, 1847.

provement. Without the united aid and energy of the Home and Colonial Governments, men of wealth will not advance their capital in an undertaking of such magnitude, and the noble results of the enterprize will never be realized. On the other hand, by the coopération and support of the Imperial Government, with moderate interest taken by the commercial and agricultural population of these colonies, the bread of the grain-growing countries farther west—the produce of the fisheries, and the timber and mineral resources of the interior may be brought down to the Atlantic seaboard—the wild forests opened to the reception of thousands of British settlers, and the Provinces united in a common interest alike happy in its social relations, and enduring in its strength and attachment to the Empire.

By the report of the engineers employed by the Home and Colonial Governments to make an exploratory survey of the country between the Atlantic coast of Nova Scotia and Quebec, it appears that three different lines for a railway between those points have been proposed for consideration.

1st. To commence at Halifax, and run across the Province to the Bay of Fundy; thence by steamer across the Bay to St. John, New Brunswick; thence along the river St. John to Fredericton and the Grand Falls, and onward to Quebec—distance 600 miles.

The principal objections to this line, as noticed in my work on New Brunswick,* have not been overlooked by the engineers. They are the delay of crossing the bay in summer, and the risks incident to winter. In time of war this arm of the sea might be

*New Brunswick, with Notes for Emigrants. London: Simmonds and Ward, 1847, pp. 217, 218, 219.

occupied by an enemy's fleet, and the northern part of the route would pass too near the American frontier to be defended from interruption even by a large force. To these may be added the existence of engineering difficulties of no ordinary magnitude.

2nd. The second route is recommended to commence at Halifax; then to run to Truro—across the Cobequid Mountains to Amherst—along the coast past the harbours of Bay Verte, Shediac, Richibucto, Miramichi, and Bathurst—to the Restigouche and Metapédiac rivers—to the St. Lawrence, and thence along the right bank of that river to Quebec—distance 630 miles.

3rd. To commence at Whitehaven, near Canseau; to run thence to the river St. Mary's by Picton to Bay Verte, the Bend of the Peticodiac—Boistown, and to the Restigouche eastward of the Grand Falls—whole distance 625 miles. The terminus of Whitehaven has been already treated of, and with the line itself it has been condemned by the persons engaged in the survey. Other mixed routes are briefly described; but none of them offer advantages to be compared with the line I had previously recommended, and that adopted by the engineers as being "the best direction for the proposed trunk line of railway from an eastern port in Nova Scotia through New Brunswick to Quebec." The description is as follows: "From Halifax to Truro, at the head of the Bay of Fundy, passing over the Cobequid hills, and on or near to Amherst and Bay Verte, crossing from thence over to the rivers Richibucto and Miramichi, above the flow of the tide, so as not to interfere with their navigation; then by the valley of the north-west Miramichi and Nepisiguit rivers to Bathurst; then along the shore of the Bay Chaleurs

to the Restigouche river; then by the valley of the Metapediaq over to, or near to, the river St. Lawrence; then along the banks of the St. Lawrence to Riviere du Loup, and from thence continued through either the second or third concessions along the river until it approaches Point Levi.²¹

The immediate local transport of this line, so far as it passes through Nova Scotia, would not perhaps exceed that of the eastern route, but its general advantages far surpass those that would arise from any other track, and it intersects the richest mineral districts of the Province. It would open up 10,000,000 acres of wilderness land to agricultural operations, by the surplus population of the mother country—an object sufficient of itself to render the undertaking one of national consequence.

By passing along an extensive line of sea coast, the cost of construction will be much reduced, and the greatest facilities afforded for the transportation of the produce of the fisheries, and the developement of the commercial resources of the Gulph, the St. Lawrence, and the interior Canada. Remote from the American boundary, it would be completely safe in the event of a war with the United States, and in peace free from any competition that would affect its profits. The whole route is over land, an advantage not enjoyed by the American railways along the Atlantic coast, where the transfer of goods and passengers from rail cars to steam boats, and steam boats to rail cars, increases the delay and risk of transportation.

The principal engineering difficulties to be encountered by the railway between Halifax and Quebec are the ranges of high lands extending from east to west, already noticed in the chapter relating to the geology

of the country. One of these elevated ridges extends from the borders of the Gut of Canseau to the western extremity of the Province. It is intersected at several places by river vallies, one of which fortunately occurs between Halifax and Truro, affording an easy passage for the railway in that direction, along the borders of the terminating lakes of the Shubenacadie, and those that empty themselves into Halifax harbour.

The next ridge I have called the Cobequid range. The railway will ascend this elevated land, along the ravine of the Folly river in Londonderry, until it attains a summit level, near the Folly Lake, of 600 feet above the tide at Dartmouth. By keeping above the tide flow of the rivers emptying into Northumberland Straits and Bay Chaleurs, the line avoids the high lands and lake estuaries of New Brunswick. Entering the valley of the Metapediac, it attains a summit level of 760 feet on the peninsula of Gaspé, whence it descends to the St. Lawrence, and proceeding along the terraced border of that river 190 miles, it reaches Point Levi opposite Quebec. The whole line runs at almost right angles to the rocky strata—the directions of their highest ridges, and the courses of the rivers. It cannot, therefore, be considered very favorable, so far as the construction of the railway itself is concerned; but the fact is of much importance in regard to its utility, for it cuts the different rocky and mineral beds at right angles, and intersects the rivers—the natural feeders of commerce.*

It is not the object of this work to enter widely into the subject. It may, however, be observed, that notwithstanding the enthusiasm displayed in the report, already adverted to, the facts drawn from a variety of

*See Report on the proposed Trunk line of railway from an eastern port in Nova Scotia through New Brunswick to Quebec. Halifax, 1848.

sources and quoted in it, tend to show that the Halifax and Quebec Railway will yield a handsome return for the required outlay. The population that will be benefited and become contributors to this line is estimated at 400,000 souls. Taking the contributions made to railways by the population in parts of the United States for a guide, the sum of 10s. per head, per annum, upon an average, is set down for the receipts of the Halifax and Quebec line, which, it has been supposed, will yield £200,000 per annum from that source. To this sum may be added the profits of transporting the mails, troops, munitions of war, and commissariat supplies, with the gradual extension of commerce, and the traffic arising from immigration. Then, far beyond the profits that it would yield as a mere speculation, are the national benefits offered to the relief of the poor,—the improvement of the British North American Colonies—their attachment to each other, and their union with the parent country.

In reference to our industrial resources, the Halifax and Quebec Railway, as thus described, would pass along the valley of the Shubenacadie river and lakes from the capital to Truro, a distance of 55 miles; it would be convenient for the large settlements in the valley of the Stewiacke, eastern part of Hants county, and other villages southward, and form the main channel of transport to and from Pictou, and all the eastern settlements of the Province. Besides the live stock, meats and agricultural produce, now transported by animal labor,—coal, iron, gypsum, lime, slate, and other minerals, might be advantageously despatched to Halifax. From the neighborhood of Truro the railway would run through the populous villages of Onslow and Londonderry, and taking a gorge in the Cobequid mountains, it would enter the county of Cumberland. The rich and extensive vein of iron ore in the southern side of

those mountains has been described in a former part of this work. This ore would be intersected, and all the iron required for the railway, as well as for other purposes, might be supplied by manufactories erected at its site. Every facility would also be offered for the exportation of the iron from the foundries and manufactories.

In Cumberland, the railway would approach Tatmagouche, Wallace, Waterford, and Bay Verte harbours, and before it reached the Bend of the Peticodiac it would intersect the fine agricultural districts and populous villages of River Philip, Amherst, Fort Cumberland, Sackville, Dorchester, and Memramcook. The coal fields of Cumberland and Colchester would be crossed at points where they are known to be productive, and probably near the outcroppings of Spring Hill. At this place one of the coal strata is 12 feet in thickness, and the coal is of excellent quality. Here also there are inexhaustible supplies of limestone, gypsum, freestone, and grindstones, with salt springs. The population of Cumberland is about 12,000—of Westmoreland, 15,000. In those two counties, and on both sides of the Province line, there are upwards of 10,000 acres of dyked marsh, yielding wheat and hay. A still greater area may be dyked and rendered productive. The whole face of the country between Amherst and the Bend of the Peticodiac is occupied by flourishing villages, many of which were originally cleared by the Acadian French. The amount of traffic to and from this quarter—the growing sea ports on the northern shores, and the number of passengers to and from the interior, would be important. From the Peticodiac the course of the railway would be to some point on the Restigouche, touching the Miramichi. In that distance it would cross the New Brunswick coal field to the dis-

tance of 120 miles, where the country is level, and remarkably favorable for the work. Excepting a few new settlements, this part of the line would reach through vast tracts of ungranted land fit for cultivation. The country between the Peticodiac and Boistown contains coal, iron ore, gypsum, limestone, freestone, and marble, and, excepting coal, those minerals may be found as far west as the valley of the Tobique. The whole district under consideration is one of great resources and capabilities. Not less than 5,000 square miles of wilderness land remain unoccupied in this part of New Brunswick, where the physical advantages of the country are equal to any of the richest portions of British America. Here colonization is the primary object. The estimated expense of constructing the railway over the above distance is £7,000 per mile, and the total cost, including contingencies, is set down at £5,000,000.*

On the completion of the great line, branch railways would ultimately communicate with it at different points. The most important of these branches would extend to Pictou, St. John, and Fredericton. Along the whole course of the anticipated route, excellent timber is abundant, and may be obtained at a low rate even in the most populous villages; at numerous sites it may be felled at the places where it is required. Along the entire line the country abounds in rivers and small streams, capable of affording unlimited water power, and they offer the cheapest means for manufacturing purposes. White and red pine, spruce, hemlock, larch, and yellow birch, are the present staple articles of commerce supplied by the interior; now the railway would render the remote forests accessible, and afford a channel of despatch to commercial ports.

* See Appendix B.

In America no branch of industry has received more benefit from railways than agriculture, to which they transfer a great amount of time and animal strength, affording also a cheap and expeditious conveyance for the surplus produce of the farmer. The proposed railway would pass through a country whose climate and soil are favorable for agriculture, and whose timber and mineral resources are not surpassed in America.

The physical and commercial resources that would be brought into play are beyond calculation. The iron of the Cobequid mountains alone would pay the interest on the outlay between Halifax and that place; and it has been estimated that the coal along the line would return a fair interest on the whole cost of the work. Colonization offers the only channel of relief for the distress in Great Britain; and a railway through Nova Scotia, New Brunswick, and Canada, is absolutely necessary for the accomplishment of such national benevolence in this part of her Majesty's dominions.

Pressed down by competition, large numbers of the labouring classes cannot obtain employment;—others are only partially employed, and thousands are overworked to obtain even a scanty subsistence. Many of them, therefore, become unwilling paupers, and their children grow up ignorant, vicious, criminal, fatal to society, and subversive of its institutions. To relieve this unhappy condition of a large part of the population, during the past year companies have been organized, and the Government pressed for aid in the work of removing a part of the people from the old to the new world. One of these societies has been called the Canadian Land and Railway Association, who have formed a joint stock company, comprising a capital of £2,000,000, in shares of £5 each, to commence the construction of a railway from Halifax to Quebec—a work

which might be begun and completed by the resources of the laborers themselves if properly directed and encouraged by the Government.

By the fostering care and aid of the British Parliament and the Colonial Legislatures, the noble enterprise may be rendered safe to the Government, and to individuals who may invest their capital therein. Its magnitude and objects are beyond the grasp of private speculation, and should be secured against every kind of jobbing by legal enactments. Millions of her Majesty's subjects are interested in promoting the undertaking, and they look forward to the consummation of a scheme which would cement the British North American Colonies together in one impregnable mass, alike for strength and durability, and for ever secure their attachment to the parent country.*

It has been stated that the proposal to construct a line of railway between Halifax and Quebec was immediately followed by movements for railways in different parts of New Brunswick. A spirit of inquiry also sprung up in the western counties of Nova Scotia. A railway between Halifax and Digby was at one time strongly advocated. This line of communication was to be continued to St. John—across the Bay of Fundy by steam, and thence to Quebec, in preference to the entire land route already noticed. If it followed the direction of the main post road, this railway would touch the best agricultural districts of Hants, Kings, and Annapolis, whence to the capital there is an increasing transportation of live stock, meats, and the productions of the forests, farms, and dairy.

It was long ago proposed to lay a part of the above line, or a railway from Halifax to Windsor, 45 miles.

* Gesner's New Brunswick. London : Simmonds & Ward, 1847.

An account taken under the direction of the Legislature, of all the live stock, goods, and passengers, that passed between those two places in 1847, is very encouraging to the success of the enterprize. A grant was made by the House of Assembly in 1848 to make a survey of the line. The work has been prosecuted, and, after much delay, a favorable report has been obtained. The traffic in this direction is evidently ample for the security of the outlay. The numerous railway projects of Nova Scotia, and more especially New Brunswick, have evidently retarded the progress of the main trunk artery between Halifax and the St. Lawrence. But from an extended view of the general results of this medium of inter-colonial communication, it will appear evident that the great railway should precede all others in these colonies, and the success of the shorter local lines will depend in a great degree upon the operations of the uniting chain. With its root fixed upon the Atlantic seaboard, and fed by steam navigation from Great Britain, the trunk would extend through the Provinces, and in time reach even beyond the Oregon Territory. Branches would naturally shoot out in all directions, according to the healthy state of the parent stem, or the requirements of the bordering country.

The novelty and consequent excitement produced by the foregoing schemes, and the speculation that always attaches itself to new discoveries and inventions, have been succeeded by sober calculations, not the less valuable for the silence of their operations. The general depressed state of business in almost every department—the unhappy state of affairs in these Provinces—the civil wars of Europe, and the disturbed state of Ireland, have checked the progress of colonial improvement, so that no reasonable hope can be entertained that the desirable work of uniting these colonies, by the

most approved system of communication, can be entertained, unless capital is freely advanced, or secured by Great Britain to complete the work.

ELECTRIC TELEGRAPH.

Among the modern discoveries in electricity, none are more conspicuous than the Electric Telegraph. This mode of conveying information with the rapidity of lightning, continues to be adopted throughout Europe, and communicating wires will soon be fixed throughout the whole extent of the American union. They have already reached Quebec and Montreal, from New York ; and during the past season they have been extended from Portland to Calais, in the State of Maine, in continuation of the line from New Orleans ; thence they now proceed to St. John, and will, ere long, reach Halifax. The line from Quebec has already been commenced. As Halifax is the first port made by steamers from Great Britain, it is highly important to the United States and Canada that they should communicate with that place, whence the latest information from Europe may be conveyed almost instantaneously to every part of the wide-spread continent.

Several movements have been made by the Legislatures of Canada, New Brunswick, and Nova Scotia, to introduce this mode of communicating intelligence. The agents of American companies have stated, that if they can obtain a "right of way" through these Provinces, they will complete a line from Halifax to unite with Quebec, and a line stretched along the Atlantic shore to New Orleans.

Some caution is perhaps necessary in granting a right, at first sight apparently very unobjectionable. Were

the whole line entirely under the control of the Americans, the inhabitants of the United States would receive intelligence from Europe almost as soon as those of Halifax. This result should be well considered in reference to its effects upon the commerce of Halifax. It is especially necessary that the eastern terminus of the telegraph, where it unites with the British steamers, should be under the immediate control of the Government, for through such a channel, information may be despatched that would affect the interests of the Province, and even the nation itself. With this restriction, the United States would reap a benefit that cannot be enjoyed by any of the Provinces, and there can be little doubt that their own authorities would secure a similar privilege on the other side of the national boundary.

The estimated cost of the Electric Telegraph is £20 per mile, and there is no practical difficulty in extending it through a country covered with wood. If the wires should be broken by the falling trees, they are readily repaired, and the track may be cleared of the timber that, by falling, would reach the line.

So rapid is the means of communication, that news may be transmitted to the distance of 2,000 miles in a few minutes of time. Under proper management there can be no doubt that the speedy conveyance of words between Halifax and the different ports in the United States, would be of mutual advantage, and afford a high degree of satisfaction to the social circles of both countries.

The transmission of news between England, Canada, and the Lower Provinces, would stimulate the editors of newspapers, who would contribute freely to recompense the necessary outlay.

The trade existing at present between Nova Scotia and Canada requires only a very limited correspondence; but should the railway between those places be completed, the electric telegraph would be a profitable and important adjunct, and greatly contribute to our acquaintance with the western world.

EMIGRATION.

It is generally admitted that emigration from Great Britain to the vast tracts of her unoccupied lands in North America, where the climate and soil are favorable for agriculture, forms an important object of colonial policy. It is painful to reflect upon the condition of a large part of the population in the mother country. Neither imperial bounty, nor the most generous private subscriptions, are adequate to relieve the destitution of the lower and laboring classes. Every profession, trade, and occupation, is overrun; and to such an *over-populated* state has the country arrived, that necessity seems to be thrown upon the Government to open an outlet to a mass of people rendered idle and indigent for the want of labor. There appears to be no way to get rid of this redundant mass of human beings but to transport it to other portions of Her Majesty's dominions, where it may create commerce and manufactories—enlarge the fisheries—open the mines, and redeem the soil of countries now overshadowed by unfrequented wildernesses. The public mind should be directed to the vast fields of enterprise already discovered. These must be improved—new ones sought for, and the remote parts of the empire explored. That abundant resources still remain

unimproved, is certain, and to throw upon them the inactive population of the nation is an object worthy of the highest consideration.

Notwithstanding the Government have directed their attention to the establishment of a sound system of emigration, and much has been written upon the subject, no fixed plan has been followed out, and the operations of schemes, apparently well devised, have, in practice, proved defective. Many of the imperfections of theories advanced, and the unsuccessful efforts of emigration companies may be fairly ascribed to the lack of an acquaintance with the extreme details of the emigrant's history—the new condition in which he is placed, and the means whereby his sufferings are to be relieved. These details, when they relate only to a single individual, are simple, and comparatively insignificant; but when they are applied to an emigrant population, they are of the utmost importance, and form the pivot upon which the whole machinery must move.

From the fact that the great current of emigration has for many years past been directed to the United States, a foreign power is yearly receiving accessions of strength by the introduction of British subjects, while the provinces, from having but little addition made to their population, are falling far behind the neighbouring Republic in general improvement. It is true that this tide of emigration spreads itself over a vast expanse of surface, and its waves recoil upon the British Provinces; yet the greater number of emigrants take up their abode within the limits of the American union. It has been estimated that within the last twenty years 1,337,000 souls have emigrated to North

America ; of that number, not to exceed 20,000 have settled in Nova Scotia and New Brunswick.*

The Republican States have the advantage of railways and other public works, many of which are supplied by British capital. These afford the immigrant speedy and cheap passage, and offer him abundant employment. To obtain labour, and consequently a subsistence, at the onset, is of the first consequence to the poor settler, and it is only by the introduction of railways and other public works that such labour can be supplied in Nova Scotia, or the forests opened to the operations of husbandry.

Thousands of families who have landed in the ower Provinces, and who were compelled to beg their way into the interior, have at last, by their industry, paid for tracts of land that now reward their labor by independence and comfort ; yet, to pour into the country a great number of such families before certain employment is provided, would be but to increase their misery and burden the established population.

In no part of her Majesty's dominions are physical resources more abundant and valuable than in Nova Scotia. The Province enjoys a salubrious climate, extraordinary powers of vegetation, and seasons that ripen the necessaries and many of the luxuries of life. The chief part of the soil is easy of tillage, and productive, while the country is watered by innumerable streams that refresh the earth, and in their descent towards the sea afford abundant power to propel manufacturing machinery. The forests still afford valuable timber—the fisheries are a source of wealth, and the

* Between the 1st of April and 1st of December, 1848, 148,447 immigrants arrived at New York alone, from Great Britain and the European continent.

mines inexhaustible; yet, from lack of the modern means of communication, the industrial resources of the interior are unavailable—the farmer cannot obtain a ready market—the deep wilderness is unapproached, and, under the operations of a limited population, the condition of the country improves but slowly.

It is vain to deny that in Nova Scotia and New Brunswick there is a decided spirit of opposition on the part of the native born inhabitants to the further introduction of the poor and laboring classes of Irish into the country. The same feeling has begun to pervade the United States. In the latter country this principle has laid the foundation of powerful organized, and even armed bodies. It has created a secret cause of offence, which, unless subdued by the virtues of the people, will lead to the most unhappy consequences.

The landing of English, Lowland Scotch, or German emigrants, would be cheered by the inhabitants of Nova Scotia; but before emigration of the laboring classes from any country to Nova Scotia can be beneficial, some great fund of employment must be provided, whereby the inflowing population may obtain a subsistence, a knowledge of the country, and prepare themselves for the improvement of the unoccupied lands. For these objects no plan has ever been proposed that has so sure a prospect of success as the introduction of roads, or *rather* channels of communication with the remote forests. To render the wild lands valuable—to employ the coal, iron, and other minerals—to carry cultivation into the now solitary wilderness, and bring back the produce of agriculture, no system can be compared with that of railways.

A railway from Halifax to Quebec would open Nova Scotia and New Brunswick through their centres, where there are vast tracts of wilderness land and resources that may be made immediately available. It would give the Provinces all the benefits of foreign and domestic intercourse, and insure a safe foothold to thousands of respectable immigrants. A railway from Halifax to Windsor, if laid with a due regard to the future employment of the mineral resources and agriculture of the intervening space, would also intersect an area very favorable for the exercise of British labor.

The industry of Nova Scotia will always differ in some degree from that of Canada. The latter, altho' occupied by immense sheets of inland water and rivers, has but a limited portion of sea and fishing coast. Nova Scotia and New Brunswick are almost surrounded by such coast, with numerous islands and inlets abounding in fish. Their industry will therefore be divided between marine pursuits and agriculture. Excepting the copper mines of Lake Superior, (the value of which has been overrated,) Canada appears to be almost barren of the useful minerals and coal, and her industry must necessarily be devoted to agriculture. This difference in physical resources have a direct bearing upon the classes of emigrants that should be introduced into each Province, for, as little change as possible should be made in the pursuits of persons brought from the old to the new world.

Emigration doubtless exercises an important influence over the morals of its subjects. It is an incontrovertible fact, that many who had been led into, and suffered for crimes committed in the mother country, have, after their removal to the wilds of America,

where the temptations to vice are less numerous, and where greater rewards are offered to industry, become moral and useful members of society. But if emigration is now a work of benevolence as well as one of necessity, it is most desirable that the humane intentions of the Government should be carried out with the least possible national expense.

I have found it convenient to divide emigrants into three classes. The first of these classes consists of persons who are independent, — their circumstances scarcely require the interference of legislation, — they will always be governed by their own choice, and the highest prospects of advantage; yet, it is desirable that such should establish themselves in the villages and settlements of their countrymen, where they exercise a salutary influence in society.

The second class embraces individuals and families who, besides paying the amount of their passage money, possess from £10 to £100 each, and persons of steady habits with trades. It is desirable that this class should establish themselves upon British soil rather than embark for the United States. To gain this object both the Home and the Provincial Governments should endeavour to remove the obstacles that impede their progress from their native countries to the interior villages, wilderness lands, or fisheries of the colonies. Every object of industry should be examined and offered to their enterprise, and every information in regard to their adopted homes should be diffused among them. The lack of such information has lost to Nova Scotia and New Brunswick many useful and respectable inhabitants. The mode of obtaining wild lands should be rendered as simple and cheap as possible, and qualified agents should be appointed to

meet the emigrants upon their arrival, being first apprized of the time and port of their debarkation. Such emigrants look forward with pain to the day when the last of their money shall have been expended; but when they know that there are public works upon which they can obtain a subsistence until they become, in some degree, Americanized, they are contented. Such works in the United States are points of attraction to thousands who annually land in that country.

The third class comprises those who have only sufficient funds to pay their passages across the Atlantic, and paupers. Of these, none are wanted in the country. It has been maintained by some that emigration of the humbler grades should be conducted at the expense of the Government; that all who wish to remove to the colonies should be transported gratuitously, and supplied with provisions for a certain period, or that a fixed bounty should be paid for every head brought into the country.

To supply the emigrant with a free passage, (unless he is a pauper,) with implements of husbandry and provisions, until his first crop is secured, or to give him lands at a nominal price, would be impolitic. Such a system would be open to many abuses. Gifts like these to the indigent render them inactive and improvident. To this rule there may be exceptions, but they are not sufficiently numerous to recommend aid being given from the public funds. On the payment of a fixed bounty for the settlement of each emigrant, the munificence of the Government would terminate, and his destiny would be placed in the hands of bodies of men who, however just and honorable, would naturally adhere to their own interests to prevent loss. Experience has proved the efforts of such companies unsatisfactory.

It is not the absolute poverty of the emigrant that unfits him for an inhabitant of these Provinces; it is too often the lack of sobriety, industry, and a resolute spirit of enterprise, which should never be relaxed by the gifts of his benefactors, but cherished by that kind of encouragement that creates a noble ambition and laudable pride. Every facility may be afforded for his embarkation, and no person should be permitted to leave the ports of Great Britain who is not in health—able to endure the voyage, and to win a livelihood afterwards. The strictest regulations should be enforced on board the ships in reference to the number of passengers, cleanliness and ventilation. Sufficient supplies of wholesome food and water should be afforded, and the real necessities of the passengers carefully attended to. No person should be permitted to leave the ship during the first 48 hours after her arrival at the port of destination. Hospitals should be in readiness for the sick—the emigrant agent should be prepared for the arrival, and his general knowledge of the country should enable him to direct the strangers to the best situations according to their several circumstances and pursuits, and all this without any delay. Individuals who are in possession of small sums of money may be directed to the new settlements, or to tracts of land, for which grants may be obtained. Single men and married couples may go to the older districts, and such as have no funds may be conveyed to the public works, where they are to learn their first lessons in the industry and customs of the country. The public works required to sustain emigration have been already adverted to—namely, railways, canals, mining, and roads through the wilderness. By introducing and carrying on such public works, both the Government and emigrants would reap equal advantages.

Without the aid of such public works, it is in vain to attempt immigration upon a large scale to either Nova Scotia, or New Brunswick. Without them it is also impossible to retain any great body of European adventurers in these Provinces, for they will immediately cross the territorial line, and seek the more abundant employment offered in the neighboring republic. Immigration must be invited, not forced. The invitation is offered by opening the resources of the country, and especially the wilderness lands, and by offering compensated labor.

It is to be regretted that large tracts of land have been alienated from the Crown, and have fallen into the hands of absent proprietors, or persons who are waiting for the improvement of the country to increase the value of such lands without their aid. If a moderate tax were levied upon every hundred acres of these tracts, and that tax applied to the construction of railways, roads, and bridges, the proprietors themselves would reap an advantage, and the remote unsettled districts would be opened to the operations of the backwoodsman. A question would arise in reference to the imposition of any tax upon smaller tracts where the owners occupy and are endeavoring to improve them.

In the central portions of Nova Scotia there are still large tracts of land that might be immediately cultivated if they were accessible by roads, which would not only enter the recesses of the forests, but also open communications between new settlements already established. There is also much fishing coast, and harbours, remaining unapproachable by any road, and the borders of many fine bays are still uninhabited.

The value and importance of the British North American colonies to the parent state has seldom been fairly estimated. Their vast vegetable, mineral, and marine productions have scarcely begun to be developed, and

the asylum they offer for the over-grown population of central Britain, is almost unknown to those who would receive most benefit from their occupation. By employing a great number of ships and seamen, the timber trade alone has excited the interest of the Imperial Parliament; other objects of industry and relief have been overlooked. The climate, labor, and customs of the people, give these colonies immense powers of consumption; and just as the population increases, so will the demands for British manufactured goods multiply. It is therefore essential to balance the number of consumers with the number of manufacturers, by sending from the Old World to the New the useless mass of human beings that press upon every kind of industry. Thus also might the price of labor be adjusted, and employment afforded for the population of the whole Empire.

The great progress of steam navigation and railways offers new and almost boundless facilities for this great work. The national, social, and commercial importance of the projected lines of railway through British America, must fall upon every mind with peculiar force. The United States have upwards of 9,000 miles of railway, and every line is returning an adequate reward for the outlay. In all these British Provinces there are not 100 miles of this kind of communication. The fleet of steamers between Halifax and Great Britain is annually increasing, a weekly mail between the two countries has been established, and steam navigation is extended to all the neighboring coasts and islands. But all these great improvements will find their limits, unless the interior country be opened by railways, the wilderness lands improved, and the physical resources of the colonies brought into operation.

It is in vain to hope that such important ends can be gained, either by the settled colonists or by emigrants,

or that emigration and railway companies of themselves can be adequate to the task. They cannot be won without the aid of the Government, directed by a sound colonial system. If these colonies are worth defending they are worth improving. The inhabitants have heretofore been proverbial for their loyalty, but their attachment to the Mother country will be influenced by the protection afforded their commerce—their institutions, fisheries, and general industry. The now flourishing condition of the neighbouring States, to which many of the young and active part of the population constantly emigrate, is viewed with a restlessness dangerous to that fidelity, which can only be secured by a wise and well-timed policy, and which to the loyalty of the inhabitants shall unite their interest by improving the industrial resources of the country.

APPENDIX A.

BARONETAGE OF NOVA SCOTIA.

As the claims of a body of individuals who have been styled the Baronets of Nova Scotia, to certain lands in this and the neighbouring Provinces, have of late been revived, and much misapprehension seems to prevail upon the subject, it has been deemed proper in this place to give a brief abstract of their case, as it appears by a summary of events drawn up by themselves, and by public documents of high authority.

The Provinces of Nova Scotia, or New Scotland, in British North America, originally comprehended Nova Scotia *proper*, New Brunswick, Gaspé, Anticosti, Prince Edward Island, and Cape Breton, with a tract of country which in the settlement of the boundary between the State of Maine and New Brunswick has been given to the Americans. In 1621 this country was annexed to the Crown and Kingdom of Scotland, by James I. The hereditary office of Viceroy, or Lieutenant-General, was conferred upon Sir William Alexander, (afterwards Earl of Sterling,) his heirs and assigns, with power to settle the country, erect towns, appoint officers, coin money, administer justice, &c.

On the 28th of May, 1625, King Charles I. instituted the Scottish Baronetage, by conferring the title of Baronet upon the Honorable Sir Robert Gordon. The charter of the premier Baronet (which, by subsequent acts of the Crown, is made the regulating charter for the whole order,) appears in "Douglas's Baronage of Scotland." It contains clauses granting to Sir Robert, his heirs and assigns, 16,000 acres of land in Nova Scotia, to be held as a free barony, and royalty of the Crown of Scotland, with plenary powers to settle the same. It also conveys great seignorial and commercial privileges, and gives the grantee and his successors the right either personally, or by his deputy, of a voice and vote in all the legislative assemblies, parliaments, councils, and conventions of the Province.

On the 25th of July, 1625, King Charles I. issued a royal commission, empowering the Privy Council of Scotland to confer "the degree, state, order, dignity, name, honor, title and style, of Baronet, with such like privileges, prerogatives, immunities, liberties, and other rights whatsoever, as had been conferred upon the Premier Baronet," until the number of 150 should be complete.

On the 31st July, 1630, the charters of James and Charles I., erecting the order of Baronets of Scotland and Nova Scotia, and all acts and proclamations, and proceedings of the Privy Council, were approved, ratified, allowed and confirmed, by the Scottish Estates in Parliament assembled, on the ground that they considered the plantation of New Scotland "to be a purpose highly concerning his Majesty's honor, and the good and credit of his ancient kingdom." The King, in person, made a second ratification of the charter on the 28th June, 1633, before the Estates of Scotland in Parliament assembled. From the above period until the

death of King Charles, in 1649, the creation of the Baronets went on ; and after the restoration, and down to the union in 1707, the work proceeded.

In 1691, King William and Queen Mary granted a charter to the colony of Massachusetts Bay, in which Acadia, or Nova Scotia, is mentioned, and reservation is made of the lands and hereditaments of any person or persons, bodies politic, or corporate, to whom in virtue of any previous grant they might belong. In 1698 the charter of the Premier Baronet was officially recognized and confirmed by King William III. Upon the 27th June, of the same year, a charter of Novadomus passed upon the royal warrant, and infeftment was taken of Nova Scotia, as authorized by the charter, at the Castle Hill of Edinburgh, and duly recorded in the register of Sasines.

By the Massachusetts charter, (passed in 1691), the territories and colonies, commonly called and known by the name of the colony of Massachusetts Bay, the colony of New Plymouth, the province of Maine, and the territory called Acadia, or Nova Scotia, &c., were united and incorporated, and a certain tract of land within the same assigned to some Protestants from Ireland and the Palatinate. This circumstance led the inhabitants of Massachusetts Bay, who, until this time, had neglected the said tract of land to claim not only a right to the Government, but also to the territory,—whereupon a case was submitted in August, 1731, for the opinion of the Crown Officers, the Attorney and Solicitor Generals, York and Talbot, putting these questions :—1st. Whether the pursuers, if they ever had any right to the tract of land claimed, had not, by their neglect, and even refusal to defend, take care of, and improve the same, forfeited their said right to the Government, and what right they had under the charter, and

now have, to the lands? and 2d. Whether by the said tract being conquered by the French, and afterwards reconquered by General Nicholson in the late Queen's time, and yielded up by France to Great Britain by the treaty of Utrecht, that part of the charter relating thereto became vacated? and whether the government of that tract, and the lands thereof, are not absolutely re-vested in the crown; and whether the crown has not sufficient power to appoint governments and assign lands to such families as shall desire to settle there? To these questions those two eminent men of the English bar replied, that upon the considering the case, and the evidences laid before them, they were of the opinion that the pursuers had not been guilty of any *laches* of a kind to create a forfeiture of the rights conveyed by their charter; that the country not having been yielded by the Crown of England to France by any treaty, the conquest thereof by the French created—according to the laws of nations—only a suspension of the property of the former owners, and not the extinguishment; and that upon a re-conquest of the country by General Nicholson, all the ancient rights, both of the Province and of private persons, subjects of the Crown of Great Britain, did revive, and were restored *jure postliminii*; that the Crown had not the power to appoint a particular Governor of this part of the Province, or to assign lands to persons desirous to settle there; and that upon the whole matter, they considered the pursuers ought not to be disturbed in their possession, or interrupted in carrying on their settlement of the lands granted to them, within the district in question.*

In 1763 the treaty of Paris was concluded, when Nova Scotia, in its original limits, was restored to the British

* Nova Scotia Question. W. Brettell, 36 New Bond street, London, 1848.

Crown, and when, according to the law of nations, and the usages of the British Government in all times past, the rights of the Baronets to their baronies, and regalties of 16,000 acres each, revived.

Such are the leading features of the claims set forth by the Baronets of Nova Scotia. The number who claim 16,000 acres of land each, with the titles, is 111, and among them are some of the chief nobility of England and Scotland. They have held meetings from time to time since the order was created. Petitions have also been laid before Parliament to obtain lands, or the renewal of their charter, and they are still urging their case to the notice of the Government.

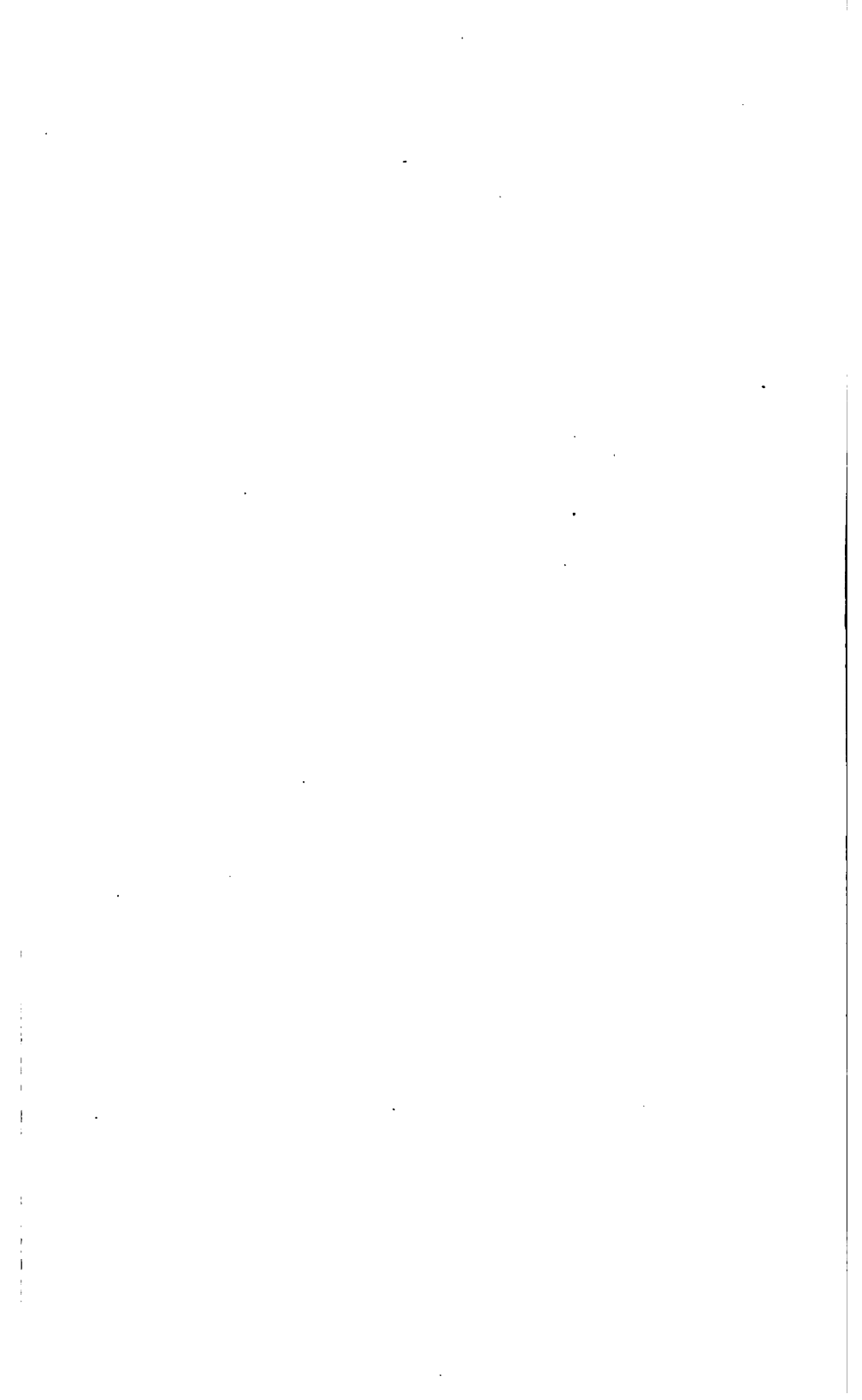
It is almost unnecessary to review the arguments brought against these claims; certain it is that the Baronets never made any successful effort to settle the lands obtained under their charter even at periods when the Government offered bounties to immigrants into Nova Scotia. The country was conquered and reconquered, and defended, at the cost of the nation, and the British Provincials of Massachusetts. More than two centuries have passed away since the charter was given to the Premier Baronets. In that long period neither the descendants of the Earl of Stirling, nor any of those who have claimed the title, have taken up their lands and carried out the conditions of the charter. The final conquest of the country was followed by the general introduction of British subjects. The lands of the Province have been fully granted by the Crown to such subjects, who have improved the country, and now occupy the most valuable part of its surface. All this has been going on openly, and under the cognizance of the claimants, until it has become impossible for them ever to obtain possession of any but wilderness territory, and by grants proceeding from the

Crown. Whatever might have been their original right of territory, that right has evidently been impaired by their inability to comply with the terms and conditions thereof. Excepting Annapolis Royal, the whole of Nova Scotia was conveyed by Sir William Alexander to LaTour, who was equally unsuccessful in the colonization of Acadia, and the whole territory reverted to the Baronets.

The old charter of Massachusetts had been forfeited, when King William and Queen Mary renewed that charter, and in it included the Provinces of Maine and Nova Scotia. From this period the country was defended by the inhabitants of New England, whose memorable conquest of Louisburg made them masters of the whole colony until the peace of Utrecht in 1713. Should the Government now assign to the Baronets a wilderness tract 3,000 miles from Scotland,—occupied by warlike savages,—and the subject of contention between two rival powers, they will then have an opportunity of reviewing the bounties of their original charter, which, from a variety of circumstances, and the inability of the grantees to meet its obligations, has been rendered a nullity in regard to all the lands actually granted by the Crown in these Provinces to other persons. This view of the question is evidently entertained by the Baronets themselves, who do not lay claim to the alienated and improved portions of the country, or the exercise of greater legislative privileges than those conferred upon other British subjects. They now propose “that the senior Baronets should relinquish their rights to the grants originally made, which lie, some of them in Nova Scotia *proper*—some in Cape Breton, and others in New Brunswick; and that a consolidated grant of two and a half million

acres should be given to the whole body (senior and junior) out of the vacant lands in the latter Province, which still exceed 12,271,031 acres." * They desire that those lands shall be given them upon the line of the proposed railway between Halifax and Quebec. They have placed in the hands of the Government a formal protest against the "sale, grant, or concession of any of the vacant territory within the Province of New Scotland as originally bounded, pending the settlement of the claim of right now urged by the Baronets." The inhabitants of Nova Scotia need have no apprehensions in reference to their own titles, for these the Baronets have never attempted to disturb; and should the commutation they now seek from the Government be fully granted, it would be advantageous to these Provinces by facilitating the noble work of the railway, and colonizing a tract of wilderness country to which the labor of the native population would scarcely extend in centuries to come. To enlist the energies, capital and influence of a body so highly intelligent and respectable, in the desirable work of colonizing the uninhabited regions of Nova Scotia and New Brunswick, is of great importance to the best interests of the country, and for which alone the real value of the lands applied for, by them, is but a reasonable and very moderate equivalent.

* Nova Scotia Question, p. 12.



APPENDIX B.

The plan proposed for raising the capital necessary for the completion of the Halifax and Quebec Railway is based upon the fact that the Provinces and the Empire have such an interest in its formation that it should be undertaken by them conjointly for the public weal. The Provinces, supported by the credit of the Mother country, could raise capital at a rate of interest which could not be done by any company of shareholders; and if to this advantage be added the disposal for the exclusive benefit of the railway, of a portion of the wild lands along the line, and in the immediate country which it would be the means of opening to settlement and cultivation, then it is highly probable that it would be constructed for three millions sterling. It has been estimated that there are in the counties through which the line will pass, fourteen millions of acres of land yet ungranted, and therefore remaining at the disposal of the Provincial Governments.

The ordinary price of an acre of wild, or uncleared land, is about 2s. 6d. to 3s. per acre; but where pub-

lic roads are made through them, the value immediately increases, and it will not be considered an extravagant estimate to suppose that the land along it, or in the immediate vicinity of the railway, will be worth £1 per acre.

For the construction of the great St. Lawrence canal, by which Canada has now the prospect of reaping such immense advantages from the trade of the western country, the Imperial Government guaranteed the interest on a loan of two millions sterling, and upwards, at 4 per cent. This loan was easily raised, and a large premium per cent. was received in addition for it. There can be little doubt that another loan of three millions sterling, at the same rate of 4 per cent. interest, could be raised upon the credit of the provincial revenues if guaranteed by the Mother country. With this amount of capital, and two millions of acres to be reserved, and sold from time to time, it is conceived the railway may be made.

Upon the strength of these two millions of acres, and the loan as a basis, a large amount of *notes* might be issued in the payment of wages and salaries of the laborers and other persons employed on the works of the railway. They should be made receivable for taxes and customs duties. The amount authorized to be issued might be limited to the extent of the acres, and as these were sold an equal amount of notes should be cancelled.

The issue of a number of notes which would pass current over these provinces, would be conferring a great benefit upon the community at large. The currency is not the same throughout, and persons who travel from one province to another are now put to inconvenience, and have often to pay a discount upon

exchanging the notes of one colonial bank for those of another. Advantage might be taken of the measure to assimilate the currency of the colonies to each other, and make it "sterling," the same as in England. By a little arrangement also, these notes might be made payable at the chief ports of emigration in the United Kingdom, and in that case a very great convenience would be afforded to a large class of persons on both sides of the Atlantic.

To remit small sums now requires the intervention of bankers, or agents. This has the effect upon persons resident in the settlements, (and no doubt often also in the towns,) of preventing their sending the assistance which they otherwise would do to friends at home. Many a small note would be put up and sent in a letter, which now is never thought of for want of the convenience. In remitting sums from Halifax to England, the banks do not like to give bills at less than sixty days' sight. These notes would, therefore, become a great public benefit, and there would be no fear of their being kept in circulation to any amount.

Upon the loan of three millions, the interest at 4 per cent. would amount to £120,000 per annum. Of this sum it may be fairly assumed, that, for the conveyance of the mails between Halifax and Quebec, the Post Office department would be willing to pay, annually, an equal amount to what is now paid for the same service. This has not been officially obtained, but there are good grounds for supposing that it is nearly £20,000. In case, then, that beyond this the railway only paid its own working expenses, the sum of £100,000 would have to be made good out of the revenues of the Provinces. The proportion of this,

or whatever sum might be deficient to pay the interest on the loan, would have to be arranged, and it may, for the sake of illustration, be supposed to be as follows:—

Nova Scotia,	£20,000—proportion,	2
New Brunswick,	20,000	“ 2
Canada,	30,000	“ 3
The Imperial Govt.,	30,000	“ 3
<hr/>		<hr/>
£100,000		10

For the proportion guaranteed by the Provinces they would receive the benefits conferred by the railway in developing their resources—increasing the value of all property—promoting the sale and settlement of their wild lands—increased population, and increased revenue. For the proportion guaranteed by the Imperial Government, all government officers, civil or military, troops, munitions of war, supplies, &c., for the public service, and emigrants, should be transported over the line at the cost price.

New Brunswick and Nova Scotia, it is understood, are most willing to guarantee the interest to the extent of their means, and in a fair proportion. Canada having done so much already for the communications above Montreal, it is fully expected will not be backward in perfecting those below Quebec. In the extreme case supposed above, viz., of the railway yielding no returns beyond the working expenses, it is not conceived that either one of the provinces, or the empire, would not receive an equivalent in some other form for its direct contribution to make good the interest. “Deducting £20,000 for the conveyance of the mails, then the sum to be responsible for would be

£60,000, which, divided proportionably, as before, would give, for—

Nova Scotia,	£12,000—proportion,	2
New Brunswick,	12,000	" 2
Canada,	18,000	" 3
Great Britain,	18,000	" 3
Total,	£60,000	10

Therefore, for the responsibility (perhaps for *assuming it only*) of £100,000, or, as the case may prove, £60,000, the Quebec and Halifax Railway may be made."—*Railway Report*, 1848.

The following suggestions were made by the Hon. H. H. Cogswell, previous to the survey of the Halifax and Quebec Railway :—

"Upon the proposed line there are upwards of five millions of acres of Crown Land fit for cultivation. This immense tract is now of very small value, but were the railway completed, it would produce as many pounds, including the numerous stations that would be required on the line, and as depôts for articles to be forwarded by the rail cars, and which would command a price of at least one hundred pounds per acre.

"The railway line would traverse immense coal fields, now of no value; but it is believed that were the line completed, the transport of coals to Quebec and Halifax would (if conducted by the Government, and without a reservation of the Royalty,) defray the annual expense. It has been asserted that an inexhaustible supply of coals can be placed upon the rail cars, at a sum not exceeding 5s. per chaldron, and the difference between that sum and the selling price at

Halifax and Quebec would accrue to the railroad as a profit. The locomotives would also receive their supplies, in passing to and fro, at that small price.

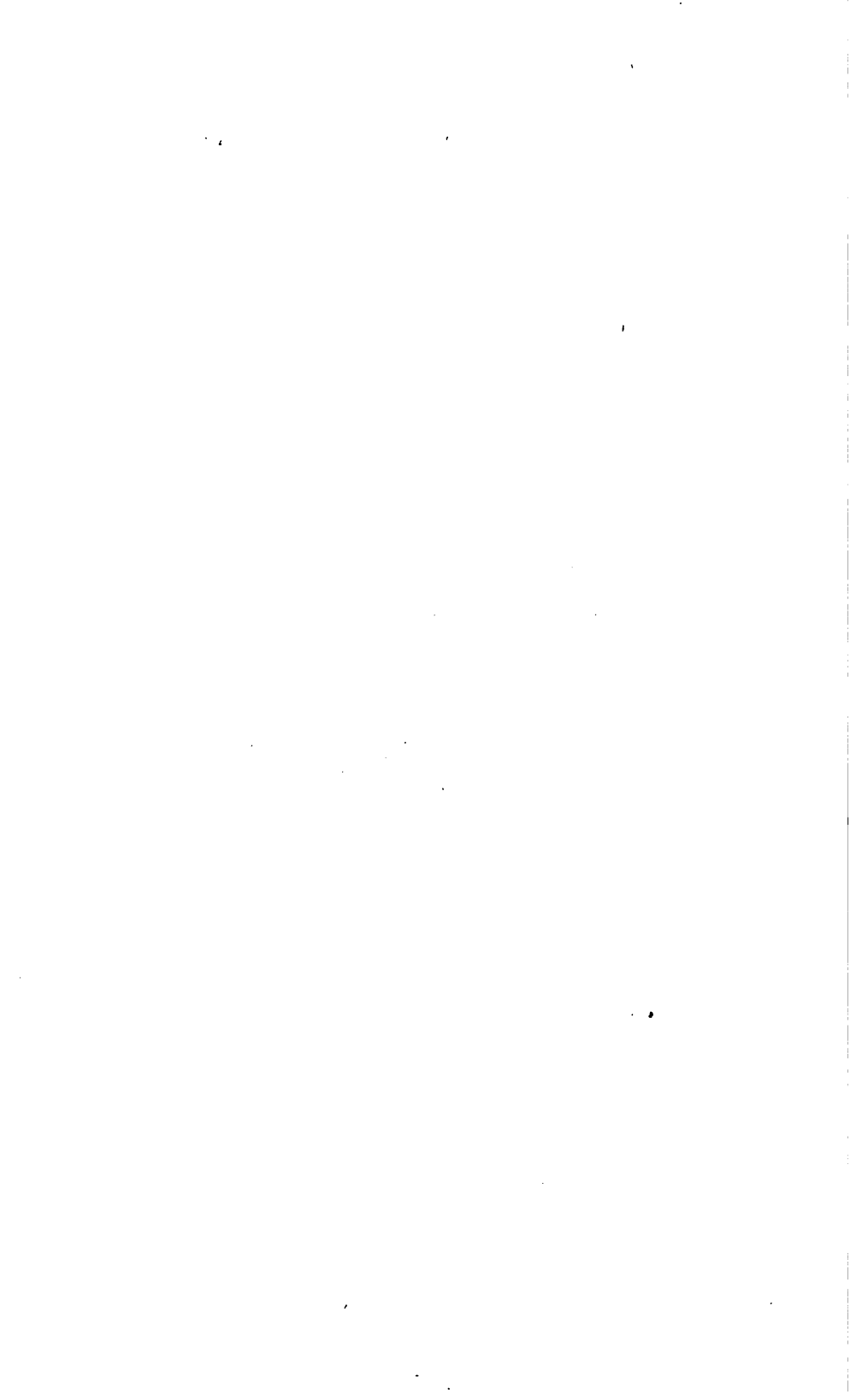
"It may be said that this arrangement would interfere with the rights of the Mining Company, but surely the Government might effect a compromise, as the company cannot now, nor never can work these mines unless the railroad is completed. There can be little doubt, therefore, that for an object of such immense importance, they would relinquish their claim to the coal fields referred to; besides, their shipping ports of Pictou and Sydney would not be interfered with. Thus abundant funds might be furnished for the completion of the work, by the Government, who would then have the entire management of its concerns without any interference, together with its collateral and powerful auxiliary, the Electric Telegraph, which, in time of war, it would be of immense importance to possess. All the troops in these colonies might be concentrated at one spot in the course of two or three days after notice, and as fresh and prepared for action as at the hour they might leave their respective barracks.

"It seems, therefore, only necessary that the Imperial Parliament should sanction advances for the railroad until completed, and then the lands, and the mines and minerals, would most probably repay the whole advance. But as these colonies will be much benefitted by the railroad, it is not too much to expect, and little doubt can be entertained that they will cheerfully grant, one-tenth part of their nett revenue for ten years towards so important an object. The sum thus granted by the Colonial Legislatures would amount, perhaps, to half a million; and probably in the ten

succeeding years they would be repaid the whole sum by an increased revenue under the same tariff.

“The machinery for carrying this mighty enterprise into operation should be under the control and management of the Imperial Government and its officers in the colonies. Let it be supposed that the number of persons to be employed upon the whole line shall be 10,000 ;—let one thousand be selected from the Royal Engineers, Artillery, and troops of the line, whose period of service has nearly expired, and who would volunteer to engage in this service for a certain period, or until the completion of the service. All these would be competent to discharge the duties of non-commissioned officers, and to superintend the labor of the nine thousand, under the direction of experienced engineers and military officers. Let nine thousand be composed of emigrants, able-bodied, and well calculated to use the axe and the spade. All such persons should, of course, be entitled, for this particular service, to receive military pay, rations, and clothing, and be subject to military orders and control, and be entitled to their discharge upon the completion of the work ; and grants of land, from five to fifty acres, upon the line of the railroad, upon which, for the purpose of extensive accommodation, each should have but a small front. These small allotments might be made the rewards of good conduct to such persons as may render faithful, diligent, and conspicuous services during the performance of the work.”

Thus would the whole cost of this gigantic undertaking be defrayed from the resources it would open and bring into immediate operation.



*Exports from Nova Scotia proper, with their quantities and value ;
also the number of Vessels, Tons, and Men, employed therein
for the year 1848.*

Apples,	bbls.	2,422	£ 703
Ale and Porter,	casks	501	1,029
Bacon and Hams,	casks	168	341
Beef and Pork,	bbls.	7,438	14,762
Barrels (empty)	No.	2,830	358
Bread and Biscuit,	bags	223	199
Butter,	firkins	5,973	9,609
Candles,	boxes	363	400
Carriages,	No.	10	115
Cheese,	boxes	740	731
Chocolate,	boxes	1,315	715
Coal,	chaldrons	35,527	29,528
Cider,	bbls.	485	207
Confectionary,	cases	269	636
Cordage,	coils	491	770
Corn and Grain,	bushels	11,500	980
Eggs,	dozen	22,000	387
Fish, (dry)	qtls.	271,475	119,180
Fish (pickled).	bbls	201,491	137,024
Fish (smoked).	boxes	34,157	3,862
Furniture,	cases		362
Grindstones,	{ tons	10,330	} 6,998
	{ No.	30,502	
Gypsum,	tons	46,960	6,383
Hats,	cases	50	200
Hides, (raw)	No.	640	200
Hay,	tons	118	326
Leather,	sides	1,516	829
Neat Cattle,	head	4,198	5,482
Horses,	No.	15	346
Malt,	bags	320	159
Meat, (fresh beef)	qrs.	647	971
Oil (fish)	tuns	920	24,488
Oil Clothes,	suits	476	238
Potatoes,	bushels	57,516	7,318
Poultry,	casks	86	129
Skins and Furs,	pkgs.	110	2,682
Skins (Seal)	No.	3,577	514
Soap,	boxes	215	225
Stone, (Free)	tons	2,220	1,501
Turnips,	bushels	4,153	238
Cabbages,	crates	411	250
Wearing Apparel,	pkgs.	42	280
Battens, Deals,	{ pcs.	189,250	18,925
and Deal Ends			
Timber,	tons	1,783	2,005
Other Wood Goods, viz :	}		56,642
Shingles, Staves, Lum-			
ber, &c.			
Wool,	bales	84	1,050
Miscellaneous articles	}		1,007
not amounting to			
£100 each,			

TOTAL.—Value, £460,769 ; vessels, 4232 ; tons, 434,382 ; men, 29,136.

The total amount of Exports from Cape Breton in 1848, was £63,-002 5s. 2d sterling. The shipping—392 vessels, 39,608 tons, 2,326 men.

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